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ADDRESSES AND ORIGINAL ARTICLES

TOXIC GOITRE

WITH SPECIAL REFERENCE TO THE DISEASE IN OLDER PEOPLE

BY HAROLD COOKSON, M.D. Birm., B.Sc., M.R.C.P.
PHYSICIAN TO THE CORNELIA AND EAST DORSET HOSPITAL, POOLE

OUR conception of the age-incidence of toxic goitre has radically altered in the last twenty years, for until recently many cases in middle-aged and elderly women went undiagnosed. There is now evidence that the disease is commoner in women over forty than below this age, whereas fifteen to twenty years ago toxic goitre (or, as it was called then, exophthalmic goitre or Graves's disease) was regarded as essentially a disease of girls and young women. In the first edition of a well-known textbook published in 1922 the onset is stated to be most commonly between the ages of fifteen and thirty, and the disease is defined as a condition due to abnormal secretion of the thyroid gland usually associated with an increase in the size of the gland, protuberance of the eyes, loss of weight, fine tremor of the hands, palpitation and rapid action of the heart, and general nervous irritability. At that time the effect of iodine was misunderstood, and its oral administration to patients suffering from hyperthyroidism was thought to aggravate the symptoms. The discovery or rediscovery by Plummer in 1923 that iodine could be given in toxic goitre, not only without harm but also with benefit, was of great value.

Of equal importance is the discovery that toxic goitre in middle and old age is common; but, so long as the diagnosis is restricted to patients presenting the classical picture of exophthalmic goitre, the disease at these age-periods is likely to be missed, and this is a serious error, because appropriate treatment is effective. The age-incidence and sex-incidence in 400 cases of toxic goitre seen by me between 1930 and 1938 in private and hospital practice is shown in table I. These figures indicate

TABLE I—AGE-INCIDENCE AND SEX-INCIDENCE IN 400 CASES OF TOXIC GOITRE

Age	Female	Male	Age	Female	Male
1–10	1	0	51–60	91	12
11–20	27	1	61–70	50	9
21–30	47	8	71–80	7	0
31–40	57	7	—	358	42
41–50	78	5			

that toxic goitre is less common in that period formerly regarded as the usual age-incidence than in later life: 37 per cent. of the patients were aged forty or less; 63 per cent. were over forty; no less than 42 per cent. were over fifty; and the highest incidence was in the sixth decade. The sex ratio is seen to be 8·5 women to 1 man, which is similar to that usually given. The features of the disease, including the age-incidence, probably vary in different parts of the country and still more in different countries; but in the present series, made up of a group drawn from the London area and another from the south coast, there was little difference in the age-incidence in the two groups.

Symptoms and Signs

It will be convenient first to consider those symptoms which are characteristic of classical exophthalmic goitre and to see how they are represented in the older patient.

THE THYROID

In the girl and young woman with toxic goitre the thyroid is, as a rule, definitely enlarged and the swelling in the neck obvious at a glance. In fact a definite clinical enlargement of the thyroid is almost essential to the diagnosis of toxic goitre in a woman under thirty. Most often it is diffusely enlarged and smooth. In the older patient, on the contrary, the neck may have to be examined carefully by inspection and palpation before any abnormality can be made out. The thyroid is very frequently small, hard, and nodular; it is often only palpable low in the neck in the suprasternal notch. The patient should be asked to swallow, when a small nodule, just palpable with the tips of the fingers dipping deep into the notch, may be felt to rise with the trachea and become more definite. Palpation must be used as well as inspection and many small firm nodular goitres are missed because hasty inspection only is employed. If after examination in this way no goitre is discovered, it is unlikely that one will be revealed by radiography of the chest; for, although there are goitres situated entirely in the chest behind the upper sternum and even at lower levels, they are rare. The goitre that is visible radiographically as a retrosternal mass is with few exceptions palpable in the suprasternal notch, especially if the effect of swallowing is investigated. It is probable that the abnormality of the gland has been present for many years, and in many cases the patient will admit to having had a goitre since her teens or twenties. In others she will not be aware of any lump in the neck, but will recall having had one in early life, but "it went away." Parkinson and Hoyle (1934) elicited a history of goitre for fifteen to forty-five years in 33 of 68 cases. The question arises whether or not a cervical goitre may be present in the absence of any palpable or visible enlargement. There is no doubt that such undetectable goitres do exist. Sometimes there is a firm indurated feeling of the tissues in front of the trachea without any swelling; in others the neck looks and feels normal in every respect. This is, however, a condition more likely to be found in the male than in the female. It has been generally agreed that there may be no clinical enlargement of the gland, but it is also true that actual enlargement is not invariable in toxic goitre. The following case illustrates a severely toxic thyroid well within the normal limit of weight, though the histological picture was abnormal.

A woman, aged 42, was admitted to hospital in March, 1938, complaining of palpitation, nervousness, and tremor for a few months. For three days she had had pains in the region of the right costal margin passing through to the back, and she had become jaundiced. On examination there was exophthalmos and tremor of the hands; there was no wasting and no goitre visible or palpable, but the pretracheal tissues felt indurated; the heart-rate was 104, and auricular fibrillation was present; a long diastolic rumbling murmur characteristic of mitral stenosis was audible at the apex; there was tenderness below the right costal margin, but

nothing was palpable in the abdomen; no signs of heart-failure. Van den Bergh reaction: delayed direct positive and indirect weak positive. Two weeks later the heart-rate was 150, in spite of treatment with digitalis. Basal metabolic rate +35 per cent.; radiography showed moderate enlargement of the heart to the left and right; pulmonary artery prominent; left auricle only slightly enlarged. Cholecystography gave a normal shadow. A diagnosis of toxic goitre and mitral stenosis was made; the pain over the liver and the jaundice could not be attributed to these conditions, and their cause remained uncertain.

June 16, 1938: total thyroidectomy (Mr. N. F. Adeney); gland adherent and of the consistence of rubber; weight 12 grammes; section showed "relatively little colloid and marked hyperplasia of intra-acinar cells and some increase in vascularity" (Dr. William McNaughtan). Six days after the operation the irregular rhythm of auricular fibrillation gave place to a rapid regular rhythm of 160 with pulsus alternans; electrocardiogram showed auricular flutter; the next day impure flutter was present, and two or three days later normal rhythm returned. The B.M.R. a month after the operation was −15 per cent. In November, 1938, the patient was at work; pulse-rate 60, normal rhythm; slight signs of myxœdema; mitral diastolic murmur still present.

THE EYES

The very conspicuous ocular changes, which are characteristic of toxic goitre in young women and make diagnosis possible at a distance, are exophthalmos and retraction of the lids (fig. 1). These may be separate or combined, unilateral or bilateral. Retraction of the lid alone gives an illusory appearance of prominence of the eye, but according to Pochin (1938) it is not difficult to discriminate between the two conditions. When the upper lid is retracted, the sclera is exposed above the cornea; and, when the eye is closed, the upper lid shows a horizontal wrinkle. Fig. 2A shows a man, aged 51, with retraction of the lids; after operation all his symptoms disappeared except the ocular changes (fig. 2B); these became more conspicuous, true exophthalmos being added to retraction of the lids, and there was ophthalmoplegia (paresis of the left external rectus and left superior rectus muscles). This syndrome has been described by Brain (1937). With exophthalmos alone there is exposure of sclera below the cornea. When toxic goitre affects people over forty there is rarely exophthalmos. The eyes may be quite normal, but in most cases they present changes which, though not striking, are characteristic. The conjunctiva appears thick and œdematous, and the eyes have a bright staring appearance (fig. 3), which may partly depend on slight retraction of the lids. This is sometimes intermittent, a momentary lift of the lids being seen from time to time while the patient is engaged in conversation. The reverse change, ptosis of the lids, is not unknown; it is seen in wasted patients and may then be secondary to enophthalmos. But it also occurs apart from wasting (fig. 4), and myasthenia gravis, in which ptosis is common, has been reported in association with goitre by Cohen and King (1932) and Allan (1934). Thickened pigmented eyelids and a sallow or muddy complexion are usual, combined with an animated expression. Once these common changes in the eyes and face are appreciated they are almost as helpful in diagnosis as the bulging eye. The change which the facies undergoes after operation is remarkably rapid; within forty-eight hours a loss of pigmentation, a smoothing of the skin, and alteration of the expression, which becomes more placid, may be seen. Of the present series, notes on the eyes were made on 138 patients aged forty or more. In 43 of these no ocular changes were noted; in 30 the eyes were described as slightly prominent (though no attempt was made to separate real exophthalmos from illusory exophthalmos due to retraction of lids); in 3 there was definite exophthalmos; in 40 they were staring; in the remaining 22 there was a bright moist appearance of the conjunctiva, or thickened lids, or von Graefe's sign.

FIG. 1—Girl, aged 13, with toxic goitre; exophthalmos, and retraction of upper lid, greater on the right side.

FIG. 2—Man, aged 51, with toxic goitre: (A) before operation; auricular fibrillation; retraction of lids. (B) After operation; exophthalmos and ophthalmoplegia have developed, though all other symptoms have disappeared.

TREMOR, LOSS OF WEIGHT, AND OTHER SYMPTOMS

Tremor of the fingers was observed in most of the older patients, but it is less constant than in the young. It is usually fine in amplitude and best seen in the strongly outstretched arm and hand. Sometimes, like the goitre, it is better felt than seen. In 132 patients aged forty or more tremor was absent in 39 and present in 93; the tremor was fine in 83 and coarse in 10.

Weight will always be lost sooner or later in the untreated case; but, if the symptoms are mild or moderate, in early cases, or when a patient has been under medical treatment, the nutrition may be satisfactory; and even obesity is compatible with an actively toxic goitre as judged by the cardiovascular effects. Auricular fibrillation not accompanied by heart-failure, nervousness, and tremor, may be discovered to be of thyrotoxic origin in a person who is over rather than under weight. Such a patient will usually have a good appetite, have no gastro-intestinal symptoms, and lead a sedentary life. The absence of wasting should never prevent the diagnosis

of toxic goitre in this age-group when other symptoms, particularly those connected with the cardiovascular system, point to it. Whereas Swinton (1936) found that loss of weight was nearly always prominent, Slesinger (1939) notes that auricular fibrillation bears no relation to the general symptoms. Of 134 cases investigated from the nutrition point of view, 38 reported no loss of weight, 59 a slight or moderate loss, 9 a considerable loss, and 28 a gain.

The *basal metabolic rate* was estimated in 54 patients aged forty or more, a large majority of whom were free from the influence of iodine. The figures show a wide range from −12 to + 93 per cent., with an average of +34 per cent.; in only 7 was it less than +10 per cent., and 4 of these had received iodine for periods of two to eight days. The rate thus appears to be fairly constantly elevated but not invariably so, and a rate within normal limits should not be allowed to weigh unduly against the diagnosis. When the B.M.R. is not definitely elevated and the patient has had no iodine, a reduction of the rate after a course of iodine may be used as diagnostic evidence (Means 1937). This method is open to the objection that it is sometimes difficult to get an initial stable value for the B.M.R., and that tests after the administration of iodine may be vitiated by spontaneous variations in the course of the disease. Moreover, patients with low metabolic rates are probably relatively unresponsive to iodine.

Gastro-intestinal symptoms are common. The excessive or ravenous appetite usual in the young patient is not found in the older type. The appetite may be good or unaltered, but not infrequently it is impaired in association with symptoms of dyspepsia. The latter may in fact be so prominent as to lead to the mistaken diagnosis of a primary abdominal lesion. Flatulence, retching, and epigastric fullness after meals are the commoner abdominal symptoms. With complete rest and administration of iodine these symptoms usually subside rapidly without

FIG. 4—Woman, aged 53, with toxic goitre and ptosis of the lids.

dietetic restriction or treatment with special drugs. Gastric ulcer, one of which perforated, was present in 2 patients of this series. Vomiting and diarrhœa were noted only in association with thyrotoxic crisis, which is a rare event in the older patient and is an emergency of decreasing frequency in the young, probably because of earlier treatment. Activation, by which is meant a restless dynamic aspect, and a flushed warm moist skin may be present, but they are not so conspicuous as in the young. Psychosis was observed in 9 patients in the older group, subtotal thyroidectomy being performed in 6. In 2 of these there was complete relief of the mental symptoms; 2 others have been operated on recently, and it is too early to judge the effect; in 1 symptoms persisted and became intensified, and 1 died in postoperative crisis; and 2 of the remaining 3 did not respond to medical treatment and died. Diabetes has been found in only 3 patients, severe in 1 and mild in 2.

FIG. 3—Woman, aged 61, with toxic goitre; paroxysmal auricular fibrillation; the eyes have a bright staring appearance; the enlargement of the thyroid is visible beneath and between the sternocleidomastoid muscles.

CARDIOVASCULAR MANIFESTATIONS

The cardiovascular symptoms which predominate in importance in the older age-groups are essentially three: simple tachycardia, auricular fibrillation, and alterations in blood-pressure. To these heart-failure is sometimes a sequel.

Some increase in *pulse-rate* is almost invariable, though, like the other symptoms, it must be considered in relation to the conditions under which the patient is seen. While a normal pulse-rate in an ambulatory patient who had received no treatment would be very strong evidence against the diagnosis, a rate under 70 may be observed after a short period of rest and administration of iodine in a patient who yet may develop a postoperative thyrotoxic crisis a few days later. Not only is the pulse-rate increased under resting conditions but it is labile, as shown by the exaggerated response to mental excitement and infections.

Auricular fibrillation is one of the most characteristic features of toxic goitre and of considerable help in diagnosis. It is rare before the age of thirty but becomes increasingly common up to the sixth or seventh decade; and this is true both of permanent fibrillation and of paroxysms before and immediately after thyroidectomy. Table II shows the incidence of permanent and paroxysmal fibrillation in 400 cases classified in ten-year periods. The permanent arrhythmia was present in 68 (17 per cent.), a large majority of these (48 patients or 70 per cent.) being in their sixth or seventh decade. Further, a higher proportion of those with postoperative paroxysms (68 per cent.) also was found in these age-groups. In 1 case auricular paroxysmal tachycardia was present before operation, and in 1 it was recorded two days after thyroidectomy. Auricular flutter was never found

before operation but came on in 1 case after operation as a transition between auricular fibrillation and normal rhythm. This patient received no quinidine. A proportion of those with auricular fibrillation developed signs of right heart-failure (35 per cent.). In 3 only was this present with normal rhythm. In 2 of these all symptoms disappeared after thyroidectomy, and there was no reason to believe that either had primary cardiovascular disease, nor was the blood-pressure high; in the third hypertension was present.

A raised *blood-pressure* affecting both systolic and diastolic tensions has been found very frequently in the older age-groups. In young subjects it is generally considered that there is some increase in the systolic pressure and little or no alteration in the diastolic, the pulse-pressure being increased. This may also happen in the older group, but it has been found far less often than diastolic hypertension. Hurxthal (1936) regards diastolic hypertension in toxic goitre as a coincidence; but it does not seem possible to accept this view, and Parkinson and Hoyle (1934) also believe diastolic hypertension to be a feature of the disease. Table III shows that of 200 patients aged forty or over, 133 had a systolic blood-pressure of 160 mm. Hg or more (66·5 per cent.), and in these 133 the diastolic pressure was 90 mm. Hg or more in 103 and below 90 in 30. The pressures were generally estimated with the patients ambulatory, for the arterial tension, as in most other types of high blood-pressure, falls to a variable extent with complete rest. These figures suggest that increase in blood-pressure occurs too often to be assumed as merely

TABLE II—INCIDENCE OF AURICULAR FIBRILLATION IN 400 CASES OF TOXIC GOITRE CLASSIFIED ACCORDING TO AGE

Age	Permanent A.F.	Paroxysmal A.F.	Postoperative paroxysmal A.F.
21–30	0	0	2
31–40	6	0	0
41–50	8	0	3
51–60	27	0	5
61–70	21	2	6
71–80	6	1	0
—	68	3	16

coincidental. An attempt was made to provide a control series by estimating the arterial tension in 100 ambulatory patients, of whom 90 were women and 10 men, thus giving a similar sex-distribution to that of toxic goitre. Their ages ranged between forty and eighty, and all had symptoms due to lesions not connected with the cardiovascular system, and none showed any evidence of toxic goitre. No case with malignant disease, active tuberculosis, or Addison's disease was included; the majority had neurosis, or dyspeptic symptoms, or rheumatoid arthritis. The figures for the blood-pressure in this group indicate that hypertension is common, 33 per cent. having a systolic pressure of 160 or more, and 32 per cent. a diastolic pressure of 90–120. High pulse-pressure with a diastolic pressure less than 90 was found in one only. The incidence of hypertension, though high, was only half that of the goitre group. With the relief of tachycardia and other thyrotoxic symptoms after thyroidectomy, the high blood-pressure may show only a slight fall or none at all; but this cannot be regarded as a strong objection to

TABLE III—BLOOD-PRESSURE IN 200 PATIENTS WITH TOXIC GOITRE AGED FORTY OR MORE

	Systolic blood-pressure			Diastolic blood-pressure		
Mm. hg ..	160–200	Over 200	Below 90	90–110	110–130	130 or over
Cases of toxic goitre	113	20	30 (15%)	77	20	6
	133 (66·5%)			51·5%		

BLOOD-PRESSURE IN 100 CONTROL CASES

	Systolic blood-pressure		Diastolic blood-pressure		
Mm. Hg ..	160–200	Over 200	Below 90	90–110	110–120
Control cases ..	30	3	1	29	3
	33			32	

the thyrogenic origin of the hypertension, for the failure to lower the pressure might be due to irreversible changes in blood-vessels and vasomotor system.

RADIOLOGICAL FINDINGS

The form and size of the heart often undergo changes (Parkinson and Cookson 1931), slight or moderate enlargement taking place in rather less than half the cases. Considerable enlargement is seen in those with very high blood-pressure and in those with auricular fibrillation. Prominence of the pulmonary arc is found in a minority, but with greater frequency than can be explained by the shape of the chest or on constitutional grounds, as has been suggested (Gotta 1938). Aortic changes, such as a high arch, uncoiling of the arch, and a prominent knuckle, are often present and are probably related to present or past increase in blood-pressure. In addition, the form of the vascular pedicle may be modified by a retrosternal goitre and, when venous congestion is present, by engorgement of the superior vena cava.

Toxic Goitre in Men

The well-known difference in the sex-incidence in young people applies equally to the older group. In the present series the ratio between women and men was 8·25 : 1 up to the age of forty, and 8·7 above this age (table I), which is almost the same. No important difference was noted in the symptoms in the two sexes, but an enlarged thyroid may be more difficult to recognise in the male. In women toxic goitre is present without clinical abnormality of the gland only on very rare occasions, though it may be discovered only after careful examination. Out of 358 patients there was only 1 in whom other symptoms alone compelled the diagnosis. On the other hand, in men a considerable goitre may be so embedded in the more powerful muscles of the neck as to defy detection. Under these conditions a confident diagnosis may yet be made on such characteristic symptoms as auricular fibrillation and ocular signs for which no other cause can be found.

A case of this type is illustrated by fig. 2. In this man, aged 51, the neck was normal on inspection and palpation, and, as he was wasted, the structures were easily palpable; but there was retraction of the lids and auricular fibrillation, and the B.M.R. was +66 per cent. There was no evidence of rheumatic heart-disease, and the blood-pressure was roughly 160/50 mm. Hg. At operation an enlarged

thyroid was found deeply buried in the tissues. The portion removed, about $\frac{7}{8}$ of the whole, weighed 68 g. The complete gland therefore weighed about 80 g. or four times the normal. Rapid improvement followed operation, sinus rhythm being restored on the thirteenth day by small doses of quinidine.

When, in the absence of detectable abnormality of the thyroid, the symptoms are insufficient for a definite diagnosis, operation is best deferred. A goitre may later make its appearance and clinch the diagnosis.

Diagnosis

In the older group of patients obvious changes in the eyes and in the thyroid are rarely present to proclaim the diagnosis. The changes in these organs are not often such as to call attention to themselves, and they must be sought for when the symptoms indicate the possibility that the thyroid is at fault. A bright staring moist appearance of the eyes and slight retraction of the lids are commonly present, but in many the eyes are unaltered. Ptosis of the lids is seen occasionally but cannot be relied on as diagnostic. The thyroid, it is true, may not be palpable, but with practice in the examination of the neck this is most exceptional. In these rare cases the gland has burrowed deeply into the tissues or is very small or entirely intrathoracic. Apart from increase in size, an unduly firm or nodular gland is evidence that its structure is pathological. This is frequently discovered on palpation in the suprasternal notch, and this and other regions of the neck must be examined with the head in various positions and while the patient swallows.

FIG. 5—Woman, aged 53, with toxic goitre: (A) Before operation; anasarca, ascites, auricular fibrillation, pulmonary infarction. (B) Four months after total thyroidectomy. Normal rhythm; 35 lb. gain in weight. Working.

Weakness and wasting are general symptoms which may have a thyroid origin, and special symptoms are related chiefly to disturbances of the cardiovascular, nervous, and alimentary systems; but there is considerable variation in the way in which these are combined in different people. Cardiovascular changes are probably the most constant, simple tachycardia must still be regarded as a cardinal symptom, and raised blood-pressure with increase in systolic and diastolic tension must now be included among the commoner features. From the diagnostic point of view, auricular fibrillation occupies a dominant position. Ten years ago an ætiological classification of 361 cases of fibrillation showed that rheumatic cases came first numerically, "non-rheumatic" second, and those due to goitre third (Cookson 1930), but today, with altered views on the clinical picture, many more cases would be regarded as toxic goitre, and there is little doubt that it would occupy second place. It is suggested therefore that, when auricular fibrillation is found and evidence of rheumatic heart-disease is lacking, goitre becomes at once the probable cause, and the probability is increased rather than lessened if there is also high blood-pressure.

The value of the B.M.R. in diagnosis has certain limitations, being sometimes within normal limits when there are advanced cardiac changes, though a rate within the upper limit of normal may yet be raised for a given patient. A diagnostic test with iodine is advocated for this type of case, thyrotoxic cases alone showing a depression of the B.M.R. after its use; but there are difficulties in the application of this test which have been mentioned above. Recently attempts have been made to establish biochemical criteria of diagnosis, such as the excretion of creatine, blood-iodine and lipoid content. Griffiths (1939) has found resistance to the peripheral action of insulin in goitre both with metabolic rates above and within normal limits. The exact value of these promising methods will depend on the demonstration of significant differences from the normal and from those conditions which simulate toxic goitre.

In the differential diagnosis the problem presented by certain psychological disturbances, such as anxiety neurosis, which is well known as a source of difficulty in young subjects, is again encountered in the older groups, though less commonly. On the rare occasions when such a case presents a goitre with rapid unstable pulse and tremor, the psychological features may suggest that the goitre is not the cause of the symptoms. Apart from those with psychosis most goitre patients are cheerful and coöperative and make light of their symptoms, though they may lack emotional control. In those with prominent dyspeptic symptoms the presence of a goitre and of a simple tachycardia or auricular fibrillation suggests the possibility that they are of thyroid origin. Essential hypertension has to be considered in the differential diagnosis, for, although the pulse-rate is usually not elevated (Pickering et al. 1936) and auricular fibrillation is uncommon, a small proportion of patients, usually women with very high pressures, have constant tachycardia, nervousness, and restlessness. Further it has been stated by some (Laubry et al. 1938, Hurxthal 1934), though denied by others (Robertson 1938, Lequime 1937), that the B.M.R. in these patients may be elevated. If there is no clinical abnormality of the thyroid, a diagnosis of toxic goitre should not be made except

after the most careful consideration in this type of case. When auricular fibrillation is associated with a rapid ventricular rate in mitral stenosis, murmurs may be absent, and a thyroid origin for the arrhythmia may be considered. However, in rheumatic fibrillation the ventricular rate is rapidly controlled by digitalis, and the diastolic murmur of mitral stenosis will probably then become audible. More frequently, however, it is cardiac failure with fibrillation of thyroid origin that is mistaken for heart-disease due to rheumatism or degeneration or of doubtful ætiology. The correct diagnosis is less likely to be overlooked if it is recognised and remembered that, except for rheumatic heart-disease, this clinical picture is most often the result of thyrotoxicosis.

Treatment

Until the cause of toxic goitre is known, all methods of treatment must be regarded as makeshifts. The older patient, like the young adult or adolescent, is likely to have relapses and remissions and may continue in fair health for many years with no treatment except periods of rest and perhaps administration of iodine. One should not speak of cure when symptoms are relieved in these cases, but rather of an arrested activity or a quiescent stage, as in pulmonary tuberculosis, and there is at all times the possibility of a serious exacerbation with auricular fibrillation or other symptoms, which, if untreated by radical measures, may prove fatal. At present the available evidence indicates that the quickest and surest method of relief is by the surgical removal of a large part of the gland. The presence of auricular fibrillation with or without heart-failure probably always warrants operation, though good results of X-ray treatment have been reported in cases with this arrhythmia (Newman and Garland 1938). More evidence on this method is required before it can be accepted as a serious rival to surgery in this type of case. The dramatic results which surgery can give are illustrated by the patient shown in fig. 5, who had gross heart-failure with auricular fibrillation. There was anasarca, ascites, and a very large liver, and several pulmonary infarctions occurred. After thyroidectomy normal rhythm returned, symptoms disappeared, and she was able to resume her ordinary mode of life. Age per se is no bar to operation; but, if there are degenerative vascular lesions, it may be inadvisable. A patient with a history of cerebral thrombosis, for example, would probably not be suitable. On the other hand, coincidental primary heart-disease is not a contra-indication, at least up to and including the sixth decade. Two patients in this series with goitre, auricular fibrillation, and rheumatic heart-disease regained normal rhythm after thyroidectomy.

Psychosis is a complication which may completely clear up after operation, but maniacal symptoms may not respond to medical treatment, death supervening before the patient can be brought into a fit state for operation. Careful medical treatment is an essential preliminary to operation, and in those with severe general or visceral symptoms this may need to be very prolonged. If the case is complicated by an independent condition—e.g., cholecystitis—which appears to demand a separate operation, this should be deferred if possible until after the thyroidectomy. When for special reasons it is undertaken first, the medical preparation should be as thorough and on the same lines as for thyroidectomy, including administration of iodine. There is otherwise a serious risk of a thyrotoxic crisis.

Summary

In a series of 400 cases of toxic goitre, 63 per cent. were over forty years of age and the greatest incidence was in the sixth decade. In older patients the disease may not be recognised if the classical symptoms of exophthalmos and considerable enlargement of the thyroid are relied upon, though changes in both the eyes and in the gland are usual. An eye sign which has been seen in a few cases is ptosis of the lids. Cardiovascular symptoms may be prominent when the general symptoms are mild. Auricular fibrillation is so characteristic a feature of the disease that the diagnosis must be suspected on the basis of this arrhythmia alone, if rheumatic heart disease can be excluded. The value of the basal metabolic rate in diagnosis is limited, for an apparently normal rate may be high for a given patient. Differential diagnosis includes psychological disorders and essential hypertension. The quickest and surest method of relief is by surgical removal of a large part of the thyroid.

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DEFICIENCY OF VITAMIN B_2

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NOT all pellagra-like deficiency diseases are curable by nicotinic acid. Elvehjem et al. (1937) reported the cure of black-tongue in dogs by the administration of nicotinamide and this was very soon followed by reports from others on the value of nicotinic acid in human pellagra. Spies, Cooper, and Blankenhorn (1938) administered in 1937 nicotinic acid in doses up to 0·5 gramme daily to four patients with pellagrous lesions of the mucosa and rapidly cured them. Fouts, Helmer, Lepkovsky, and Jukes (1937) almost at the same time reported the cure of four cases of alcoholic pellagra with nicotinic acid. Many other workers soon published reports of cases successfully treated with nicotinic acid (a résumé was given in a leading article in THE LANCET last December) and Alport and colleagues (1938) and others have reported on the value of nicotinamide. Manson-Bahr and Ransford (1938) described a case of pellagrous stomatitis and diarrhœa which was cured by a full diet and nicotinic acid 0·15 g. daily; the diarrhœa ceased immediately and the stomatitis cleared rapidly. In this case I think the full diet and the cessation of the pellagrous diarrhœa may perhaps have been the cause of the disappearance of the stomatitis, though of course the

nicotinic acid may have cured it. The article mentions that the stomatitis in sprue cases at the Hospital for Tropical Diseases in London has not been cured by nicotinic acid.

In 1935 Pallister and I published a paper on a deficiency disease occurring commonly in prisons and other institutions in Malaya, characterised in its early stages by eczema of the scrotum and/or angular stomatitis and soreness of the tongue, and readily curable in this early stage by yeast or Marmite, fresh or autoclaved, which would always bring about marked improvement within two weeks (Landor and Pallister 1935). This disease thus fell into the group of pellagrous conditions which may legitimately be ascribed to deficiency of some portion of the vitamin-B_2 complex. After this Aykroyd and Krishnan (1936) described cases of angular stomatitis in India which were curable by the administration of autoclaved yeast; they referred to the similarity to the disease described by us in Malaya but did not observe any eczema of the scrotum in their cases. Moore (1937), to whose earlier work on this subject of deficiency of vitamin B_2 Pallister and I referred in our original paper, has made further investigations, and the syndrome he describes is remarkably like ours. Wright (1936), as mentioned by us in our original paper, has also described a similar disease; in 1927 he referred to it as the A and B avitaminosis of Sierra Leone; now he further postulates a lack of sulphur in the diet as a contributory cause. In our cases in Malaya, however, apparent cure is obtainable, at any rate in the earlier stages, with autoclaved marmite alone without any special source of vitamin A being added to the diet at all. I have recently tried the effect of administering sulphur in the form of sodium thiosulphate (mentioned by Wright) by mouth and intravenously and have found no benefit in my cases. Another physician in this country informs me that he has cured similar cases by administration of sodium thiosulphate, but he was working with hospital patients on good hospital diets, and, though there may be some significance in the observation, the evidence of sulphur being of value per se seems unconvincing to me. Wright also mentions benefit from oral administration of ichthyol and from injections of Contramine, but this is complex therapy the interpretation of which is open to argument.

The process of subdivision of the B_2 complex into its constituents is proceeding apace; lactoflavin has been considered by Lepkovsky and Jukes (1936) and others to be the food factor missing in the production of a dermatitis in rats and turkeys, but has not yet been proved of value in human disease; nicotinic acid, as already mentioned, has been proved of definite value in pellagra in human beings; B_3 to B_6 are still not clearly defined. The disease described by Pallister and myself has become much rarer in the Singapore gaol owing probably to dietary improvements; this is perhaps unfortunate from the experimental point of view though of benefit to the prisoners; however, the disease is still to be found there by searching.

INVESTIGATIONS WITH NICOTINIC ACID

In August, 1938, ten prisoners with eczema of the scrotum, two of them also having angular stomatitis, were given ten 0·05 g. tablets daily of nicotinic acid—i.e., 0·5 g. daily as recommended by Spies et al.—for fourteen days. At the end of this period four were worse and the mouths of three of these, previously unaffected, became sore, one being ulcerated; four showed no change; one showed slight improvement of the scrotum but developed a sore mouth, which he had not had previously; and one showed slight improvement of mouth and scrotum. Most of them had "toxic" effects, such as giddiness, flushing, sore dry throat, and itching and tingling of the skin.

The nicotinic acid was then stopped, and they were all then given marmite ½ oz. daily; improvement occurred immediately in all cases and was well marked within three days; at the end of two weeks on marmite treatment both scrotal and mouth lesions had disappeared in most cases and were much better in all. One of the original mouth lesions and one of the later mouth lesions took a further week to disappear completely, and in a few cases the scrotum did not entirely lose its scaliness and irritability till after four weeks of marmite treatment; in fact, the scrotal skin does not regain an absolutely normal texture for a still longer period, but the improvement with marmite is always so obvious that it forms a suitable control for any other treatment under trial; this was in accord with our previous experience of the disease. No other alteration was made in the prisoners' diet.

The scrotal lesions were examined for fungus in all cases; in only one case was mycelium found; in three others a few spores were found, such as may be seen in most skin scales from any cause; the other six were entirely negative.

In November, 1938, after having read the article by Manson-Bahr and Ransford (1938), I tried two prisoners with angular stomatitis, one of them having eczema of the scrotum, on the smaller dose of nicotinic acid used by them—i.e., 0·15 g. daily. After two weeks on this treatment there was no improvement in the stomatitis or scrotal eczema.

DISCUSSION

Stannus (1936), commenting on the article by Pallister and myself previously mentioned, makes the following criticism: "The pellagrologist would have no hesitation, I think, in pronouncing this condition described by Landor and Pallister to be pellagrous. In this series of cases the high incidence of the pellagrous scrotal skin affection was quite possibly determined by the tinea infection. One wonders if in these cases some other manifestations of pellagra would not have been detected by the trained eye; the hesitation to make the diagnosis of pellagra has been due apparently to the absence of the classical exanthem."

In 1937 I assured Dr. Stannus personally that we had looked very closely for other lesions of pellagra and had not found them. We did not say the lesions were not pellagrous; we said the disease was not classical pellagra, and I quote the main differences hereunder:—

PELLAGROUS SIGNS PRESENT	SIGNS OF CLASSICAL PELLAGRA NOT PRESENT
Early	
Stomatitis	Dermatitis of hands
Eczema of scrotum	Dermatitis of feet
Later	
Dimness of vision	Diarrhœa
Paræsthesiæ	Mental disturbance
Difficulty in walking, with spasticity	Macrocytic anæmia
Exaggeration of tendon-reflexes	

I grant that all the symptoms and signs described in the Malayan prison disease have been included in various descriptions of pellagra, but merely to label all such manifestations as pellagra is not necessarily helpful. It may be that the term "pellagra" has been used to cover a group of deficiency diseases. It is certain that nicotinic acid will cure some cases described as pellagra; it is

equally certain, I submit, that nicotinic acid will not cure the deficiency disease described by Pallister and myself. I believe also that nicotinic acid will be found not to cure "pellagrous" anæmia, for I have found it of little value for nutritional macrocytic anæmia in Malaya; nor is marmite very helpful in this respect.

I am hoping gradually to test the various factors of the vitamin-B_2 complex that are being isolated, but so far I am not in a position to state which is the precise missing factor in the production of the syndrome that Pallister and I have described.

EFFECT OF NICOTINIC ACID ON "CLASSICAL" PELLAGRA IN MALAYA

The following recent case of pellagra treated by nicotinic acid forms a remarkable contrast to the cases I have described above:—

A Chinese woman, aged 55, was admitted under my care at the General Hospital, Singapore, on April 11, 1938, complaining of epigastric discomfort, vomiting, and soreness of the mouth for the previous three months. The tongue was raw; there was ulceration at the corners of the mouth, on the lower lip, and on the floor of the mouth; the gums were spongy, and pyorrhœa was present. There was no anæmia.

She was treated first with mild antiseptics locally and milk of magnesia internally. By April 19 the mouth had got worse and membranous sloughs were seen; the condition was then thought to be pellagrous, and foods rich in vitamins were added to her diet, such as cod-liver oil, tomato juice, orange juice, marmite, and liver soup; vitamin C and Hepatex were also given by injection during the last week in April.

On April 23 the skin on the dorsum of the hands and feet was noticed to have become swollen and reddish-purple, especially in the region of the joints. The mouth then began to improve, but the hands and feet got worse. The blood Wassermann reaction was negative.

On the 28th she started to have diarrhœa and had blistering and ulceration of the skin of the hands and feet; the mouth, however, was now very much improved. On May 1 she was put on to sodium thiosulphate gr. 15 thrice daily. By the 4th the skin of the hands and feet was much worse, appearing dusky and gangrenous in places, with defective sensation, suggesting the possibility of acute neural leprotic lesions, and an injection of 1 c.cm. of chaulmoogra oil was given. No lepra bacilli were found.

On the 14th pigmented areas were noticed on the nose and cheeks, and cracks at the corners of the mouth were still visible; the skin of the hands was perhaps slightly improved, but that of the feet was worse; the general condition was poor, and she could not walk. On the 16th she was put on to nicotinic acid 0·5 g. daily, divided into five doses, and improvement was immediate and dramatic. The blisters on the hands and feet dried up, the dead skin peeled off leaving normal healthy epidermis beneath, the diarrhœa ceased, the mouth became normal, and she could walk normally. She was discharged in good health on June 7.

CONCLUSION

Cases of eczema of the scrotum and stomatitis at the Singapore gaol are not curable by nicotinic acid but are curable by yeast or marmite, as described in an earlier paper. They appear to be caused by a deficiency of a portion of the vitamin-B_2 complex which is not nicotinic acid. Certain signs of classical pellagra, however, appear to be curable in Malaya as elsewhere by nicotinic acid.

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LYMPHOCYTIC CHORIOMENINGITIS

ISOLATION OF THE VIRUS FROM THE NASOPHARYNX

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AND

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SINCE its first discovery by Armstrong and Lillie in America in 1934, the virus of lymphocytic choriomeningitis has been isolated from human beings on a number of occasions. Most of the patients whose spinal fluid or blood yielded virus, and many of those whose blood contained neutralising antibodies for the virus, showed the typical picture of so-called acute benign lymphocytic meningitis. However, several cases, notably the ones originally described in England by Findlay et al. (1936), showed symptoms of cord involvement with motor and sensory changes in the lower extremities and disturbance of bladder function. Nevertheless the virus incriminated seemed to be immunologically the same as or closely related to that of Armstrong and Lillie (1934) and Rivers and Scott (1935).

In the course of examination of material from patients with acute symptoms suggesting involvement of the nervous system, the virus of lymphocytic choriomeningitis has been isolated from four patients in the past year. The most interesting case, here described, was originally diagnosed on clinical grounds as acute anterior poliomyelitis, but the virus of lymphocytic choriomeningitis was isolated from cerebrospinal fluid once and nasopharyngeal washings twice. A report on the other three cases will be published later.

CLINICAL RECORD

The patient, a girl of 17, had been a professional dancer for the past two years. While on tour and feeling quite well she suddenly developed early one evening a feeling of pins and needles, without numbness, from her toes to her waist, with aching in the calves, thighs and small of the back. Although she managed to play her part in the show, the muscular pains afterwards became so severe that she got no sleep that night, and kept having to get up and walk about to try and ease them. Whenever she exerted herself, however, a diffuse headache developed.

The next morning, although the pain and headache were worse, she managed to travel about 50 miles by train to London. Her legs felt as if they might give at the knees but she was able to walk. She was, however, feverish and faint and her back very stiff.

On arriving in London she went to a doctor who found her temperature was 101° F. and sent her to bed. That night her right leg was so weak that it hardly supported her, and next morning it was completely paralysed. Her left leg also was a little weak but no more than she had experienced before in a febrile illness. By the third night, however, the left leg was still weaker and next morning it was quite powerless save at the toes which she could just move. She could not sit up. The doctor saw her that afternoon, diagnosed acute anterior poliomyelitis and sent her to Cuddington Isolation Hospital that same day, Oct. 18, 1938.

On admission she complained of headache and had complete paralysis of both lower extremities with difficulty in micturition. There were no reflexes in the legs and complete absence of muscular power, though sensation appeared to be normal. On the 19th she still complained of severe frontal headache and, on slight passive movement of the left leg, of severe pain in the back and of stiffness in the leg muscles. Lumbar puncture was performed and the cerebrospinal fluid (C.S.F.) was found to contain 101 cells per c.mm., all lymphocytes, a moderate amount of globulin, 0·04 per cent. protein; a specimen was sent to this laboratory. On Oct. 20 the pains in the head were less severe and movement of the left leg was slightly improved. Another lumbar puncture was carried out and 15 c.cm. of fluid was withdrawn. On Oct. 21 the patient appeared brighter, slept fairly well, passed urine satisfactorily, and apart from her legs felt considerably better.

On Nov. 12, 1938, the condition of her legs having improved slightly, she was transferred to the National Hospital for Nervous Diseases, Queen Square. On admission she could move only one toe in the right foot but in the left leg she could tighten up all the muscles and move all the joints through a small range.

Six weeks after the onset of her illness she was found to have normal power in her neck and no rigidity. The upper extremities were normal. In the legs there was great flaccidity. The ankles were extended but could be passively flexed beyond a right angle. Fibrillation was absent. Both peroneal compartments were wasted, making the fronts of both tibiæ sharp and prominent. Both thighs were wasted and felt soft and flabby. There was a gross degree of flaccid paralysis in both legs. The patient could not sit up without using her arms. The reflexes at both knees and right ankle were absent, but present at the left ankle; there was no clonus. The plantar response was flexor on the left side and absent on the right. There were no abnormal sensory findings.

A lumbar puncture was done on Dec. 12 and C.S.F. sent to this laboratory, but unfortunately no cell-count was carried out on this material. Blood and nasopharyngeal washings in saline were also taken at this time. Nasopharyngeal washings were again obtained on Jan. 6, 1939.

The patient made little progress and went home about Feb. 1, with paralysis of the lower extremities. After a short time her family became dissatisfied with orthodox medical treatment and transferred her to the care of an osteopath. Hence no further material was available for experimental investigation.

EXPERIMENTAL OBSERVATIONS

The C.S.F. taken on Oct. 21 was inoculated into mice and guineapigs.

Mice.—0·03 c.cm. was injected intracerebrally into 12 mice; none of them became ill and all succumbed four weeks later after intracerebral inoculation with River's W.E. strain of lymphocytic choriomeningitis virus.

Two *guineapigs* were each inoculated intracerebrally with 0·25 c.cm. and intraperitoneally with 0·5 c.cm. and placed in the same cage.

Guineapig I.—Temperature rose to 104·3° F. on the sixth day after inoculation. Blood was taken by cardiac puncture and inoculated intracerebrally in 6 mice. None of these mice became sick but 3 survived intracerebral inoculation of the W.E. strain of the lymphocytic choriomeningitis virus three weeks later. The temperature remained elevated with a peak of 104·8° F. on the twelfth day. The guineapig was killed on the thirteenth day when its temperature was 104·5° F. and the animal was becoming thin and weak. All the organs were normal in appearance. The brain was removed and found to be sterile when cultured in the ordinary bacteriological media. A 10 per cent. suspension of brain in normal saline was inoculated intracerebrally into 6 mice. On the eighth day 1 mouse was dead and 5 were sick with the typical symptoms of experimental lymphocytic choriomeningitis.

Guineapig II.—The temperature rose on the seventeenth day to 103·6° F., and reached a peak on the twenty-third day of 106° F. The animal was bled out and killed with ether. The lungs showed slight congestion and the rest of the organs appeared normal. Blood was inoculated intracerebrally in 6 mice, all of whom were dead or sick on the sixth and seventh days with typical signs of lymphocytic choriomeningitis. The brain, which was sterile after 48 hours' cultivation on various media, was also found to contain the virus on inoculation into mice.

Clotted blood from the patient received on Oct. 24 was inoculated intracerebrally and intraperitoneally in mice. None of these became sick and all succumbed to reinoculation with the W.E. strain of lymphocytic choriomeningitis virus three weeks later. On Dec. 12 C.S.F., blood and nasopharyngeal washings in saline were obtained. The C.S.F. was inoculated as before into guineapigs and mice with entirely negative results.

The virus of poliomyelitis has been isolated on several occasions (cf. Kramer et al. 1939) from nasopharyngeal washings by inoculation into monkeys, but never from the C.S.F. of human cases of acute anterior poliomyelitis. As the symptoms of this case were highly suggestive of acute anterior poliomyelitis, it was thought that possibly the original isolation of the virus of lymphocytic choriomeningitis might have been due to an experimental error. The nasopharyngeal washings were, therefore, inoculated into a rhesus monkey.

To 20 c.cm. of nasopharyngeal washings in saline in a stoppered flask was added 15 per cent. ether and the mixture was allowed to stand at 0° C. for an hour with frequent shakings. The ether was evaporated off at room temperature and the remaining fluid was used for inoculation. 1 c.cm. was injected intracerebrally and 5 c.cm. intraperitoneally. The monkey's temperature rose to 104·2° F. on the seventh day. Blood was removed by cardiac puncture, inoculated intracerebrally into mice and found to produce lymphocytic choriomeningitis. The monkey's temperature was still 104·2° F. on the tenth day and the blood still contained lymphocytic choriomeningitis virus as shown by intracerebral injection of mice. On the eleventh day the temperature began to fall, and on the sixteenth day, as the monkey was weak with lack of power in the hind limbs, it was killed with ether. At no time were there symptoms of muscular paralysis such as are seen in a monkey infected with poliomyelitis virus. After being bled out, the spleen, liver, kidney, brain and cervical cord were removed with aseptic precautions. The blood and organs were cultured in the ordinary media, found to be sterile and were then inoculated intracerebrally into mice. The virus of lymphocytic choriomeningitis was present in all the tissues.

The pathological picture in the brain and cord of the monkey was that characteristic of lymphocytic choriomeningitis and no evidence was found of changes in the cells of the anterior horn.

On Jan. 6, 1939, nasopharyngeal washings were again obtained from the patient, treated as before with ether and inoculated into 2 guineapigs, 12 mice and a rhesus monkey.

Guineapig A was inoculated with 0·2 c.cm. of a 2 per cent. suspension in saline of starch intracerebrally and 1 c.cm. of nasal washings subcutaneously. Its temperature first became elevated on the sixteenth day to 104·4° F. On the seventeenth day blood was removed by cardiac puncture, inoculated intracerebrally into mice and found to produce lymphocytic choriomeningitis. On the nineteenth day the temperature was 105·4° F. and blood again contained virus as shown by intracerebral inoculation into mice; on the twentieth day the temperature was 106·2° F., and on the twenty-first day 105·6° F. The animal was then weak and thin and was killed with ether. The brain was removed, cultured and inoculated into 6 mice with positive results for the virus of lymphocytic choriomeningitis.

Guineapig B received only 1 c.cm. washings subcutaneously. Its temperature first rose on the twenty-second day to 104° F. Its blood was positive for the virus; the temperature reached a peak on the twenty-sixth day of 106·4° F. and the animal was dead on the thirtieth day. The brain contained the virus also.

The mice and monkey inoculated with the nasal washings remained in good health but virucidal antibodies were later found in the monkey's serum.

The strains of virus isolated on all three occasions from the patient appeared to be identical, each one failing to produce disease when inoculated intracerebrally into mice already immune to the W.E. strain. Similarly, mice recovered and immunised against the new strain D.W. resisted intracerebral inoculation with the W.E. virus.

Specimens of serum collected from the patient on the ninth, twenty-fourth and fifty-eighth days of illness all failed to show any neutralising antibody against either the W.E. or D.W. strains. Serum from a rabbit hyperimmunised with the W.E. strain protected against equally concentrated suspensions of both strains.

DISCUSSION

The isolation of the virus of lymphocytic choriomeningitis on three separate occasions from the same patient, and the failure to incriminate the virus of poliomyelitis, indicate that the virus of lymphocytic choriomeningitis was responsible for the clinical picture. The possibility of a double infection must be considered, but as the nasopharyngeal washings failed to yield evidence of poliomyelitis virus there is no experimental proof of it being present.

We have no reason to believe, from various other experiments being carried on at the same time, that either the mice or the guineapigs were suffering from a latent infection with the virus of lymphocytic choriomeningitis. Both the mice and the guineapigs employed were bred in the country and had not been in contact with animals infected with the virus before being experimentally infected with material from the patient whose case we record. Traub (1936b) found that of 13 normal guineapigs placed in cages with diseased ones, only 1 contracted the disease. There is, however, a remote possibility that the monkey may have had a latent infection with this virus when injected, as among a number of monkeys employed in experimental works, 2 have been known to exhibit spontaneous infection with lymphocytic choriomeningitis.

The failure to demonstrate neutralising antibodies in the serum eight weeks after the commencement of the illness might be taken as evidence against the specificity of the infection, but the slow development of antibodies in patients infected with this virus has been stressed by Scott and Rivers (1936), and recently Howard (1939) has reported a case in which antibodies did not appear in the serum for 45 weeks.

The present is, as far as we know, the first time this virus has been isolated from the nasopharynx. It is the third case in this country in which the virus has been isolated from patients with symptoms more severe than those of acute benign lymphocytic meningitis.

The source of the infection in human cases—whether from mice, other animals or humans—has not been proven except in the two cases recently described by Armstrong (1939), when the virus was isolated from 3 of 5 grey mice caught in the homes of the infected humans; likewise the mode of infection has not yet been shown in humans. Numerous cases have been reported of so-called benign lymphocytic meningitis occurring at the same time, or following one another in several members of a household, and neutralising antibodies have been demonstrated in blood of contacts with cases from which virus has been isolated (Findlay et al. 1936).

Armstrong and Wooley (1937) found neutralising antibodies in 30 of 106 cases of recent infection of the upper respiratory tract. Recently, Lépine and Sautter (1938) described a case of accidental infection in a laboratory-worker. The virus apparently entered by injury to the cornea and produced a generalised infection, virus being isolated from the blood and urine.

Traub (1936a) showed that although the nasal secretions and urine of infected guineapigs carry the virus, the pooled nasopharyngeal washings of 5 guineapigs that had shown severe symptoms after subcutaneous inoculation with the virus of lymphocytic choriomeningitis 35–44 days previously were avirulent. In contrast to this, he found (1936b) that immune mice carry the virus in the nasal passages as long as two months after the original infection. When normal mice were placed in contact with these carriers, immunity without apparent illness was produced in the former, and in one experiment virus was repeatedly detected in nasal washings from exposed mice but never in the blood. In one mouse virus was present in the nasal washings on at least two successive days, but the animal did not become either generally infected or immune. Traub obtained negative results in two experiments in which an attempt was made to infect mice by placing them in cages heavily contaminated with virulent mouse urine.

The findings obtained in the present case, and those derived from animal experiments, suggest that the virus of lymphocytic choriomeningitis is probably present at some period in the nasopharynx of individuals suffering from this infection. It may possibly be present in the same situation in healthy carriers, and in persons suffering from febrile symptoms without definite involvement of the nervous system. Lépine, Mollaret and Kreis (1937), for instance, found that less than half the individuals infected experimentally with lymphocytic choriomeningitis showed nervous symptoms although all suffered from fever.

The finding of this virus in cases with neurological symptoms in various forms points to the need for renewed study and interest in the cause of acute infections of the central nervous system of unexplained ætiology.

The observations here recorded emphasise the importance of searching for the virus of lymphocytic choriomeningitis, not only in cases clinically resembling acute aseptic lymphocytic meningitis but also in other acute nervous and febrile complaints of unknown origin.

SUMMARY

The virus of lymphocytic choriomeningitis has been isolated from the cerebrospinal fluid and nasopharyngeal washings of a patient with clinical signs and symptoms of acute anterior poliomyelitis with paralysis still present 15 weeks after onset.

The virus was still present in the nasopharynx 8 and 12 weeks after the onset though not demonstrable in the cerebrospinal fluid at the eighth week.

The findings emphasise the need for more intensive investigation of material from neurological cases.

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STERNAL PUNCTURE

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A STUDY of the bone-marrow is now essential in all obscure disorders of the blood, for from it we may learn what are the pathological changes in the marrow, whereas blood-counts merely reflect, and often distort, these changes. Sternal puncture, which is as simple, painless, and free from danger as venepuncture, is the ideal clinical procedure for this study and in most diseases gives enough information. In some diseases, notably aplastic anæmia and myelosclerosis, it is necessary to know also the histological structure of the marrow; hence sternal biopsy must be performed with the trephine, which method will be fully dealt with elsewhere (Hynes and Scarff 1939). Sternal puncture, however, gives a clear-cut and distinctive picture in leukæmia, including aleukæmic leukæmia, and in pernicious anæmia, hæmolytic anæmias, and secondary anæmias; and it is probable that with further study its range of usefulness will be extended. A failure to obtain marrow must not be taken as diagnostic; it may strongly suggest such a diagnosis as aplastic anæmia, but this should always be confirmed by sternal biopsy with the trephine.

Human-marrow biopsy was first performed by Ghedini (1908), who aspirated marrow from the tibia; but, although his method was subsequently used occasionally on the Continent, the full clinical value of the procedure was appreciated only quite recently. The classical studies of Peabody (1927) on pernicious anæmia introduced marrow biopsy to America.

The tibia is not a very suitable bone for marrow biopsies, because in adults it contains little red marrow, and in blood disorders it is one of the last bones to show changes. The marrow of the tibia may remain yellow when that of all other bones shows considerable hyperplasia, even in such extreme conditions as leukæmia (Strumia 1929). Seyfarth (1923) pointed out the advantages of using the sternum, which always contains much red marrow and shows morbid changes at an early stage of the disease.

Sternal puncture was introduced by Arinkin (1927) and was rapidly recognised as a method of great clinical and pathological value. The most complete studies of the subject in the English language are those of Young and Osgood (1935) and Vogel, Erf, and Rosenthal (1937); both these papers contain full bibliographies.

Sternal biopsy with the trephine allows study of histological sections of the marrow as well as of smears and is therefore superior to sternal puncture, but the simplicity of sternal puncture makes it preferable, provided that the material obtained gives a trustworthy picture of the marrow. In my experience sternal-puncture smears are almost identical with those made directly from the trephined marrow of the same case; this agrees with the findings of Vogel and his associates (1937). The distribution of cells in the smears also corresponds closely to that seen in the sections. Repeated sternal punctures on the same case are consistent. Segerdahl (1935) found that a second puncture in all of thirty cases gave a differential count closely similar to the first. Nordensen (1935) found the marrow differential count to be the same in puncture material from the sternum, vertebræ, ribs, ilium, and tibia; and Vogel et al. (1937) confirmed this in one case. The sternal marrow may therefore be taken as representative of the marrow throughout the body, except in such patchy and progressive lesions as myelosclerosis.

Sternal puncture thus gives a true indication of the quality of the marrow, but it gives only a rather uncertain indication of its quantity. If aplasia is in question, only histological sections of the marrow can give a definite answer.

Technique

I have used Messrs. Allen and Hanburys's modification of the Salah (1934) needle, which is solidly built, so that there is no danger of breakage (fig. 1). The needle is sterilised in hot oil. As judged from a personal experience, the technique described produces only the mildest discomfort, but a preliminary dose of aspirin gr. 10 and Nepenthe minims 15, half an hour before the operation, soothes a nervous patient. The puncture site is chosen opposite the third rib. An intradermal bleb of a 2 per cent. solution of procaine is made at this level over the middle of the sternum, and the subcutaneous tissues and periosteum beneath are infiltrated with about 1 c.cm. of procaine. A very fine intradermal needle minimises the discomfort, and it should have a short bevel to facilitate infiltration of the periosteum.

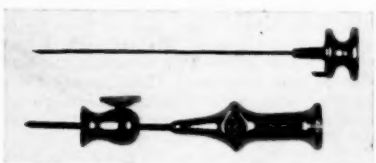

FIG. 1—Sternal-puncture needle and stylet.

The puncture needle is next pushed through the skin down to the bone and the adjustable stop fixed ½ in. above the skin. The needle is driven through the outer table of the sternum by a few sharp taps with

a small hammer; a distinctive "give" is felt as the needle enters the medullary cavity. The stylet is removed from the needle and a dry 1 c.cm. syringe attached; marrow fluid is now easily withdrawn by gentle suction, which produces a characteristic discomfort that may amount to actual pain if a large amount of fluid is rapidly withdrawn. I withdraw 0·25 c.cm. of fluid and place this in a tube containing Wintrobe's dry oxalate mixture. (For 0·25 c.cm. of fluid, place 0·1 c.cm. of a solution of 0·2 per cent. potassium oxalate and 0·3 per cent. ammonium oxalate in the tube and dry in the incubator.) The marrow fluid clots much more quickly than ordinary blood; so thorough mixing with the oxalate should not be delayed.

Smears are made from the oxalated fluid as for ordinary blood smears; there is no distortion of the cells if the smears are made within half an hour. A total nucleated-cell count—i.e., leucocytes and nucleated red cells—is done on the fluid which may also be used for supravital studies and other hæmatological techniques. The smears are stained by Leishman's method in the ordinary way and a differential count made of four or five hundred cells; several smears should be used to allow for uneven distribution of the various cell types. There should be no failure to obtain marrow after a little experience. If the marrow fluid does not flow freely, the needle either has not reached or else has gone past the medullary cavity; the characteristic suction pain is a sign that the needle is correctly placed.

There were neither complications nor unpleasant sequelæ in this series of 109 cases, nor have any been reported.

Terminology

The terminology of the cells is based on that of Whitby and Britton (1937), and the terms used are briefly defined as follows:—

Segmented polymorphs.—The nucleus shows one or more definite chromatin threads.

Non-segmented polymorphs.—These cells are usually "band forms," but in most the chromatin structure of the nucleus is characteristic of "juvenile" cells (Schilling 1929). Some authors have wrongly called all of these "stab" cells.

Metamyelocytes.—The cytoplasm is similar to that of the polymorph; the nucleus is indented.

Myelocytes.—The cytoplasm is similar to that of the polymorph but has a blue tinge because the granules are fewer. The nucleus is round or oval.

Premyelocytes.—The cytoplasm is blue and contains coarse red granules; there is no differentiation into neutrophils, eosinophils, and basophils. The nucleus has a well-marked fine reticulum, and nucleoli may be present. The earliest forms are distinguishable from the myeloblast only by the presence of a few granules; later forms are twice as large as the myeloblast and contain many red granules.

Myeloblasts.—There is very little dark blue cytoplasm. The nucleus has a sharp-cut fine reticulum, and nucleoli are prominent. There are no granules.

Lymphocyte series.—Normal lymphocytes need no description. The earliest lymphoblast is virtually indistinguishable from the myeloblast in Leishman-stained films. In lymphatic leukæmia a great variety of intermediate forms, all abnormal, are seen, but they are too numerous to be given separate names. Most of these have been classified simply as lymphocytes, the term lymphoblast being reserved for those cells which show a large definitely reticular nucleus and but little cytoplasm.

Plasma cells.—A few typical plasma cells are usually seen in marrow smears.

Monocyte series.—Typical monocytes are usually seen in marrow smears. The primitive monocyte is found only in monocytic leukæmia; it is a large cell (10 × 20 μ) with a lobed reticular nucleus, often showing nucleoli. The cytoplasm contains fine or coarse red granules. The earliest forms appear to merge with the myeloblast.

Normoblasts.—Most of these cells are the same size as erythrocytes, but larger forms up to 10–12 μ in diameter occur. The cytoplasm is fully hæmoglobinised; the nucleus is about 4 μ in diameter and is either pyknotic or has a "cart-wheel" structure.

Erythroblasts.—The cytoplasm is polychromatic. The later forms show the same variation in size as normoblasts and have a "cart-wheel" nucleus, whereas earlier forms are larger (10 μ) and have a coarsely reticular nucleus.

Megaloblasts.—The cytoplasm is a very deep blue colour. The nucleus has a very heavy reticulum with conspicuous nucleoli.

Megakaryocytes.—A few megakaryocytes can usually be found, especially if the edge of the smear is searched with the low power. The cytoplasm is lilac-coloured and resembles platelets; there are about five large oval overlapping nuclei (10–20 μ). More commonly one sees a single large oval nucleus with fragments of platelet-like cytoplasm. It has not been thought necessary to include these rather indefinite remains in the differential count.

Hæmatogones.—One can easily distinguish the structures classified by some authors as hæmatogones. They show the nucleus of a small lymphocyte with no visible cytoplasm, but intermediate forms occur between these disembodied nuclei and apparently typical small lymphocytes.

Total cell count.—The number of leucocytes and nucleated red cells counted together in the marrow fluid is a rough indication of the cellularity of the marrow. The count depends also, however, on the amount of blood mixed with the fluid—the first drop of fluid has a very high marrow content, whereas, if several c.cm. are withdrawn, the later portions may contain hardly any marrow. It is therefore important to withdraw a small and constant volume of fluid.

A total cell count below 20,000 per c.mm. strongly suggests a hypoplastic marrow, and one which is above 100,000 favours hyperplasia, but discrepancies occur. Thus, in a case of acute leukæmia in this series the sternal marrow on histological section was typical of acute leukæmia, and in the sternal-puncture smear myeloblasts formed 66 per cent. of the differential count, though there were none in the peripheral blood. The total cell count of the sternal-puncture fluid was, however, only 3000 per c.mm., and the puncture was repeated with the same result. It appears, as most authors have suggested, that very primitive cells may adhere so closely one to another and to the bony trabeculæ that they are not withdrawn with the fluid.

TABLE I—SUGGESTED NORMAL RANGES IN THE MARROW DIFFERENTIAL COUNT

Cells	Neutrophil	Eosinophil	Basophil
Segmented polymorphs	9–30	0–3	0–0·5
Non-segmented polymorphs	20–40	0–2	0–1
Metamyelocytes	2·5–12	0–2·5	—
Myelocytes	2– 8	0–1	—
Premyelocytes	0·5– 5		
Myeloblasts	0–2·5		
Lymphocytes	5–20		
Plasma cells	0– 1	Total cell count: 25,000–100,000 per c.mm.	
Monocytes	0– 5		
Normoblasts	7–19	Myeloid-erythroblastic ratio: 2 : 1–8 : 1	
Erythroblasts	2– 7		
Megaloblasts	0– 4		

Myeloid-erythroblastic ratio.—It is convenient to express as a ratio the total percentage of cells of the

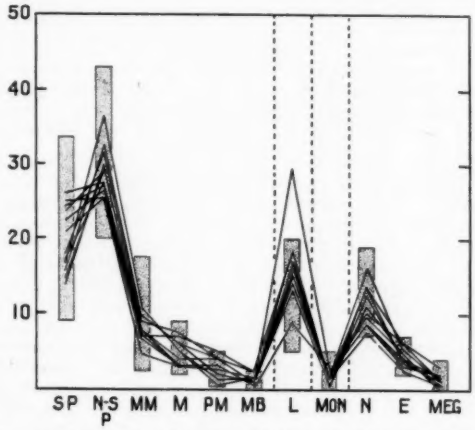

FIG. 2—Chart showing the relation of thirteen normal cases to the suggested normal range of marrow findings (table I). Total cell count 24,000–90,000. Myeloid-erythroblastic ratio 2·8–7·0 : 1. The points on the charts (figs. 2–7) show the percentages of the various types of marrow cells in the differential count. The points representing the figures in a given case are joined together to form a graph of the marrow differential count of that case. Neutrophil, eosinophil, and basophil forms are grouped together. E, erythroblasts; L, lymphocytes; LB, lymphoblasts; M, myelocytes; MB, myeloblasts; MEG, megaloblasts; MM, metamyelocytes; MON, monocytes; N, normoblasts; N-S P, non-segmented polymorphs; PM, premyelocytes; SP, segmented polymorphs.

myeloid series as compared with that of cells of the primitive red-cell series. This myeloid-erythroblastic ratio indicates whether the precursors of the granulocytes or red cells are most affected by a pathological process, and in what relative degrees.

Normal Marrow

An exact comparison of the normal standards given in the literature is made difficult by differences in terminology and in methods of recording. It is both logical and useful to include leucocytes and nucleated red cells in the same differential count, the two together totalling 100 per cent. Smear cells should not be counted; they are largely fortuitous and merely distort the picture if they are included in the differential count. Reich (1935) and Vogel et al. (1937) have centrifuged marrow fluid and carried out differential counts on smears from the buffy layer; this procedure is not only unnecessary but also disturbs the cell ratio.

The technique described here is founded on that of Young and Osgood (1935), and the normal marrow findings in this series agree closely with those of Young and Osgood if smear cells are excluded from their data. Table I shows a suggested normal range compiled from the 28 normal cases of Young and Osgood (1935) and the 13 normal young men in the present series; the relation of these 13 cases to the suggested normal range is shown diagrammatically in fig. 2.

The largest single series of normals is that of Segerdahl (1935), who performed sternal puncture on 52 young men, 40 young women, 9 old men, and 9 old women. There was no great difference between any of these groups. Unfortunately Segerdahl's classification of the cells differs considerably from that used here, particularly as regards myelocytes and metamyelocytes, and it is therefore not possible to make use of his very complete statistical analysis. There does not appear, however, to be any gross discrepancy between his figures and the normal range suggested in this paper.

In the present small series the total cell count ranged between 24,000 and 90,000 per c.mm., with a mean of 47,500. Segerdahl's (1935) range was much larger—from 10,600–238,200 per c.mm., with a mean of 75,000—and Zanaty's (1937a) range was very similar. Segerdahl found no significant difference in the marrow cell count according to age or sex. By histological studies, however, Custer and Ahlfeldt (1932) found the proportion of red marrow in the sternum to decline fairly evenly from 100 per cent. at one year to 44 per cent. at seventy years of age. In this series the myeloid-erythroblastic ratio lay between 2·7 and 6·9 : 1, with a mean of 4·25 : 1. Young and Osgood's (1935) range was 2·0 to 8·3 : 1.

The marrow-picture is characteristically distorted if much blood is included in the fluid withdrawn. The total cell count is low, and the percentage of segmented polymorphs and lymphocytes is unduly high, the percentages of the other cells being proportionately decreased. Such a finding should suggest the need to repeat the puncture.

Abnormal Marrow

The chief part of this study has been on the marrow in leukæmia and obscure anæmias; table II analyses the cases studied.

LEUKÆMIA

In leukæmia sternal puncture is diagnostic. The marrow is extremely cellular, with the normal cell ratio greatly altered by an increase in primitive white cells. The proportion of primitive red cells is depressed, but the percentage of erythroblasts is almost equal to that of normoblasts. This "maturation defect" is probably associated with the macrocytic anæmia which is almost always seen

TABLE II—ANALYSIS OF 109 CASES ON WHICH STERNAL PUNCTURE WAS PERFORMED

Normal		13
Leukæmia	Acute myeloid	10
	Chronic myeloid	11
	Acute lymphatic	5
	Chronic lymphatic	16
	Monocytic	2
Polycythæmia (untreated)		2
Pernicious anæmia (untreated)		7
Achrestic anæmia		1
Hepatic cirrhosis with macrocytic anæmia		1
Macrocytic syphilitic anæmia		1
Acholuric jaundice (untreated)		3
Aplastic anæmia		6
Myelosclerosis		6
Secondary anæmias		4
Unexplained anæmias		3
Unexplained splenomegaly		4
Unexplained splenomegaly with eosinophilia		2
Agranulocytosis		2
Lymphosarcoma		7
Hodgkin's disease		2
Medullary carcinomatosis		1

in leukæmia; it differs from the maturation defect of pernicious anæmia in that there is no premature hæmoglobinisation of the erythroblasts.

Sternal puncture is particularly valuable in diagnosing the leucopenic ("aleukæmic") forms of leukæmia. Here the marrow does not differ from that of leukæmia with leucocytosis. A quarter of the cases of leukæmia in this series were leucopenic throughout their course—4 acute myeloid, 2 acute lymphatic, 4 chronic lymphatic, and 1 acute mono-

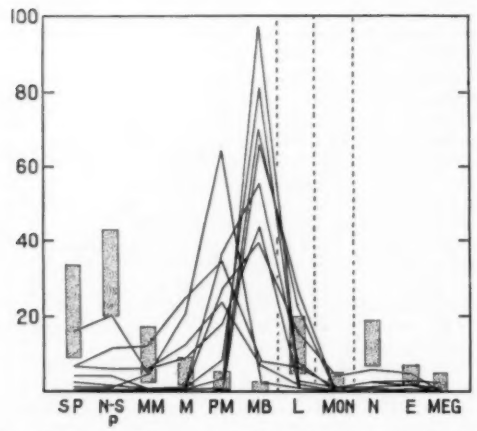

FIG. 3—Chart of marrow findings in ten cases of acute myeloid leukæmia. Total cell count 3000–310,000. Myeloid-erythroblastic ratio 6·3–1000 : 1.

cytic. All of these gave essentially the same total and differential marrow cell counts as the corresponding leucocythæmic cases.

Acute myeloid leukæmia.—Fig. 3 shows diagrammatically the findings in 10 cases. There is a great increase in the proportion of the more primitive white cells, which may form up to 99 per cent. of the total. The increase is usually in myeloblasts and premyelocytes together, but either of these may predominate. The percentage of myelocytes is often raised, but all more mature forms are depressed, often to an extreme degree. Few nucleated red cells are present, but erythroblasts are almost as numerous as normoblasts. Some cases have shown a high percentage of cells indistinguishable in stained smears from the normal small lymphocyte; these may be the micromyeloblasts of Naegeli.

Chronic myeloid leukæmia.—In early cases the percentages of myeloblasts, premyelocytes, and myelocytes are about doubled, the percentage of the other myeloid cells being about normal. Lymphocytes and monocytes are scanty or absent, and the proportion of nucleated red cells is low and shows the characteristic "maturation defect" already described (see fig. 4). In the terminal phases the picture approximates to that of acute myeloid leukæmia. The differential counts of three terminal cases are represented by the dotted lines in fig. 4.

Acute lymphatic leukæmia.—From 70 to 99 per cent. of the cells are primitive lymphocytes; cells of the myeloid and erythroblastic series show the same "maturation defect" as in chronic lymphatic leukæmia.

Chronic lymphatic leukæmia.—Lymphocytes comprised 40–90 per cent. of the cells in the marrow. Sometimes they were normal small lymphocytes, but more usually they showed abnormalities in size and nuclear structure. Very few were primitive enough to be called lymphoblasts. Cells of both the myeloid and erythroblastic series showed a "maturation defect," the percentage of the more mature forms being depressed, while that of the more primitive types was about normal (see fig. 6).

Monocytic leukæmia.—Two cases of monocytic leukæmia have been available for study. In one, of the acute leucopenic type, primitive monocytes formed 93·5 per cent. of the marrow cells; the remaining cells were mostly nucleated red cells. The other case was chronic and showed 30 per cent. of primitive monocytes and 4·5 per cent. of normal monocytes in the marrow; polymorphs were normal, but myelocytes were very low, and the nucleated red cells were at the lower limit of normality.

Effect of treatment on the marrow picture in leukæmia. Young and Osgood (1935) carried out sternal punctures on two cases of chronic myeloid leukæmia before and after irradiation of the spleen and found that both the blood- and marrow-pictures returned to normal together. Vogel et al. (1937) stated that the marrow-picture in chronic myeloid leukæmia was not affected by this treatment, but it appears from their description of the cases that the blood-count was not nearly restored to normal by their treatment. Weil and Perlès (1938) found the marrow-picture to be normal in remissions and suggested that this might form a basis for the evaluation of treatment.

The marrow-pictures of eight cases of chronic myeloid leukæmia after treatment are shown in fig. 5. Treatment consisted of irradiation of the spleen with deep X rays until the leucocyte count was reduced to 10,000 per c.mm. or less. The marrow-pictures were much nearer normal than in the untreated cases (included in fig. 4), the improvement in the nucleated red cells being especially noticeable. Statistically these changes could not be ascribed to dilution of a constant marrow with normal and leukæmic blood respectively. That irradiation of the spleen should have so profound an effect on the bone-marrow is obviously a fact which merits further investigation. Similar observations on four cases of chronic lymphatic leukæmia treated with deep X rays by various methods gave inconclusive results.

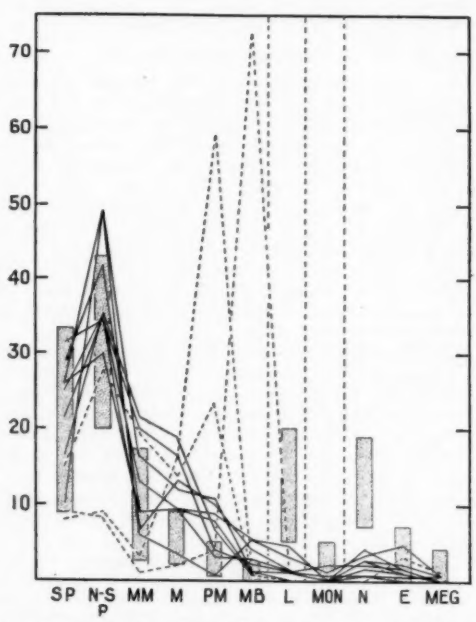

FIG. 4—Chart of marrow findings in untreated chronic myeloid leukæmia. Total cell count 130,000–750,000. Myeloid-erythroblastic ratio 10·5–1000 : 1. Dotted lines represent differential counts of three terminal cases.

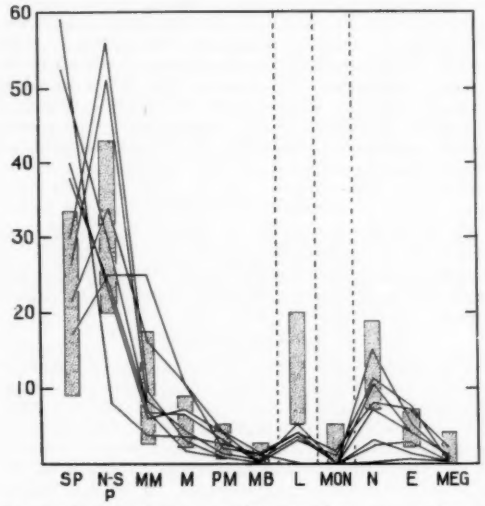

FIG. 5—Chart of marrow findings in eight cases of chronic myeloid leukæmia after treatment. Total cell count 18,000–270,000. Myeloid-erythroblastic ratio 3·9–198 : 1.

POLYCYTHÆMIA

Dameshek (1935) found considerable hyperplasia of both the erythroblastic and myeloid elements of the marrow in his four cases, as did also Weil and Perlès (1938). Vogel et al. (1937) found that the only change in the marrow differential count in polycythæmia was a preponderance of segmented polymorphs. This was the finding in one of the cases in this series, but in the other case there was a great increase in erythroblasts—20 per cent. of late and 4 per cent. of early forms. In this case polymorphs were present in normal numbers, but all other myeloid cells were very scanty.

PERNICIOUS ANÆMIA

The characteristic feature of the bone-marrow in untreated pernicious anæmia is the preponderance of megaloblasts and erythroblasts, which together make up 25–45 per cent. of the cells present (fig. 7). Of the erythroblasts, a half to two-thirds are early forms with a reticular nucleus, while the remainder have a large "cart-wheel" nucleus and are considerably larger than is normal at this stage. Premature hæmoglobinisation is prominent, and this in an early erythroblast constitutes Ehrlich's "megaloblast." The abundant cytoplasm is polychromatic, and the large nucleus (8–10 μ) has a heavily marked coarse reticulum. The proportion of normoblasts was normal in six of these cases, but in the other one there were 42 per cent. The percentage of polymorphs is greatly decreased, but the earlier myeloid cells are present in normal proportions.

The marrow is restored to normal by treatment. Segerdahl (1935) observed a megaloblastic marrow become erythroblastic twenty-four hours after beginning liver therapy. Young and Osgood (1935), on the other hand, found in one case the number of megaloblasts unchanged at the peak of the reticulocyte crisis, though there was a great increase in normoblasts; in another case they observed a great diminution in the megaloblasts ten days after the reticulocyte peak. Weil and Perlès (1938) observed that the marrow first became normoblastic, then showed myeloid hyperplasia, and finally became normal.

ACHRESTIC ANÆMIA

One case with the features of achrestic anæmia (Israëls and Wilkinson 1936) has been studied. The marrow showed the same increase in early hæmoglobinised erythroblasts as in pernicious anæmia, but the normoblasts were also increased, and the megaloblasts were normal. Zanaty (1937b) did not find hæmoglobinised erythroblasts in his cases of achrestic anæmia; his "macronormoblasts" took their place.

OTHER MACROCYTIC ANÆMIAS

A marrow similar to that in pernicious anæmia is found in sprue (Vogel et al. 1937) and in the similar anæmia due to carcinoma of the stomach and extensive resection of the intestine (Weil and Perlès 1938). One case of syphilis and one of cirrhosis of the liver, both with the blood-picture of pernicious anæmia, are included in this series; the marrow was normal in both cases.

ACHOLURIC JAUNDICE

Vogel et al. (1937) found that the marrow in chronic acholuric jaundice was almost normal, whereas in more acute types there was an increase in normoblasts. Weil and Perlès (1938) found a great increase in normoblasts and erythroblasts, even up to 75 per cent. of the total. Of the cases in the present series, in two the only abnormality was an increase in late erythroblasts; in the other, three-quarters of the cells in the smear were nucleated red cells; normoblasts, erythroblasts, and megaloblasts being increased in about equal proportions.

APLASTIC ANÆMIA

Aplastic anæmia cannot be adequately studied by sternal puncture; only histological section will show

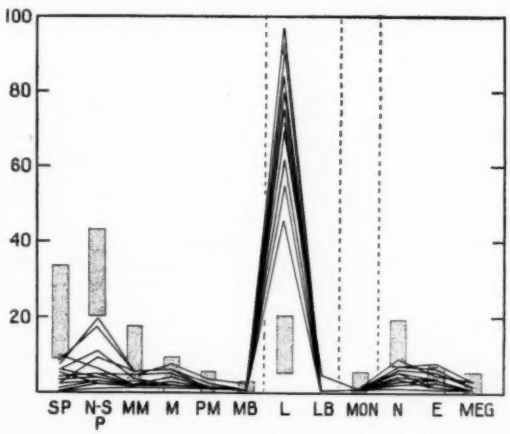

FIG. 6—Chart of marrow findings in chronic lymphatic leukæmia. Total cell count 76,000–1,000,000.

the essential architectural and quantitative changes in the marrow. The subject is dealt with in detail elsewhere (Hynes and Scarff 1939) and need only be briefly summarised here.

Aplastic anæmia is the name given to a syndrome characterised by a typical blood-picture but showing great diversity in causation and marrow pathology. The simplest case is the form due to a chemical poison such as benzol, in which the failure of blood

regeneration is obviously due to the extreme hypoplasia of the marrow. What marrow tissue remains shows a deficiency of mature cells, especially of the myeloid series, and a great relative increase in cells which have been variously regarded as small lymphocytes or "primitive cells" closely resembling small lymphocytes. Although the hypoplasia usually involves all the bones, the sternal and vertebral marrow may occasionally retain regenerative power and be almost or even quite normal. Sternal biopsy may thus confuse the diagnosis instead of elucidating it.

Occasionally, however, though these injurious agents produce the typical clinical syndrome and blood-picture, the marrow is hyperplastic and packed

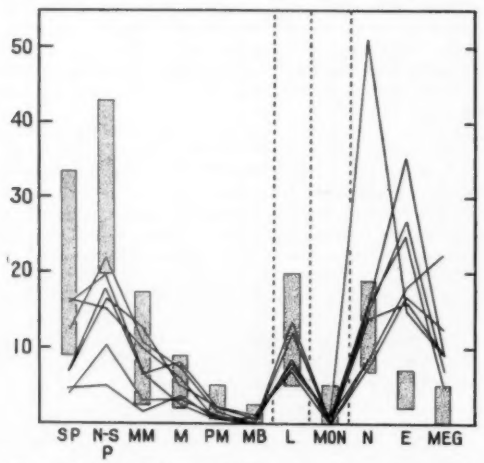

FIG. 7—Chart of marrow findings in untreated pernicious anæmia. Total cell count 40,000–110,000. Myeloid-erythroblastic ratio 0·25–1·2 : 1.

with primitive cells. The anæmia is due not to destruction of the marrow but to inability of the primitive cells to mature. In benzol poisoning several cases of this type have been described (for bibliography see Thompson et al. 1934), and Martland (1931) has described a similar result from radium poisoning. In idiopathic aplastic anæmia the marrow ranges from aplastic to hyperplastic in a similar manner (Thompson et al. 1934, Rhoads and Miller 1938).

The present series includes six cases of idiopathic aplastic anæmia, of which the sternal-puncture findings (confirmed by biopsies and histological sections) were as follows:

(1) Extreme hypoplasia, involving especially the myelocytes and later myeloid cells, with a relative increase in small lymphocytes (1 case).

(2) Marked hypoplasia, with a reduction in myelocytes and later myeloid cells; diminished or normal nucleated red cells; and a moderate relative lymphocytosis (3 cases).

(3) Moderate hypoplasia, confined to myelocytes and later myeloid cells, with a relative increase in early and late erythroblasts (1 case).

(4) An active marrow with a normal differential count (1 case).

These cases will be described fully elsewhere in association with Dr. L. E. H. Whitby.

MYELOSCLEROSIS

In myelosclerosis a chronic fibrosis of the bone-marrow is associated with splenomegaly and a leuco-erythroblastic anæmia. Sternal puncture does not help the diagnosis, whereas sternal biopsy with the trephine may be diagnostic (Hynes and Scarff 1939). If the sternum is extensively involved in the process, practically no marrow may be obtained by sternal puncture, whereas, if the marrow is still in the phase of compensatory hyperplasia, the picture resembles that of chronic myeloid leukæmia, except that nucleated red cells are more numerous.

SECONDARY ANÆMIAS

In anæmias secondary to hæmorrhage, infection, or toxæmia there is a normoblastic reaction in the marrow (Young and Osgood 1935). Late erythroblasts were also increased in two of the cases in the present series.

AGRANULOCYTOSIS

The marrow in agranulocytosis was studied by Jackson and Parker (1935) with autopsy material. In the early stages the degree of cellularity is normal, but practically all the myeloid cells are myeloblasts. If death takes place from sepsis with partial remission of the blood-picture, the marrow is hyperplastic and crowded with young polymorphs. When the disease has existed for 8–10 days, the myeloblasts disappear, and lymphocytes and plasma cells are the only white cells in the marrow. The three cases of Vogel et al. (1937) appear to have been in this last stage.

Alternatively the two types of marrow have been regarded not as successive stages but as evidence of two types of agranulocytosis: one due to aplasia of the marrow, and the other to a maturation defect (Fitz-hugh and Krumbhaar 1932). Thus Custer (1935) in his cases of agranulocytosis found that the marrow showed a considerable proliferation of myeloblasts, with few myelocytes and practically no polymorphs. The nucleated red cells were normal or slightly increased, and there was infiltration with lymphocytes and plasma cells.

The present series contains only two cases of agranulocytosis. The first, seen by courtesy of Dr. Bruce Williamson and Dr. H. G. Close, of the Royal Northern Hospital, was of the cyclical type. In the agranulocytic stage, when there were no granulocytes in the blood, the only myeloid cells in the marrow were myeloblasts (1 per cent.), eosinophil polymorphs (1·5 per cent.), and basophil polymorphs (1 per cent.). The monocytes and nucleated red cells were normal, and the remaining cells were lymphocytes with 2 per cent. of plasma cells. In the remission stage the marrow-picture was normal. The other case, a chronic one of some months' duration, had a normal marrow except for a gross deficiency (3·3 per cent.) of segmented neutrophil polymorphs.

LYMPHOSARCOMA

In six cases of lymphosarcoma in this series the marrow was normal. One other case was atypical in that there was associated a chronic macrocytic anæmia. Sternal puncture produced marrow containing 51 per cent. of small lymphocytes and 10 per cent. of lymphoblasts, with only 14 per cent. of mature polymorphs. The differential count was otherwise normal. At autopsy the bone-marrow and other organs were extensively infiltrated with lymphosarcomatous nodules.

MISCELLANEOUS CONDITIONS

The marrow was found to be normal in two cases of *Hodgkin's disease*. Weil and Perlès (1938) found a generalised hyperplasia in 10 of 25 cases, but there was no specific change.

In one case of *medullary carcinomatosis with leuco-erythroblastic anæmia* the marrow contained 22 per cent. of normoblasts, 16 per cent. of late erythroblasts, and 5·5 per cent. of early erythroblasts, and showed a deficiency of segmented polymorphs (8 per cent.). No cancer cells were found, although other authors have occasionally found them; similarly an excess of plasma cells may be found in *multiple myelomatosis* (Vogel et al. 1937).

In the two cases of *splenomegaly with eosinophilia* the marrow was normal except for an increase in eosinophil polymorphs. Even this abnormality is not always seen in cases of eosinophilia (Vogel et al. 1937, Weil and Perlès 1938).

Sternal puncture may be diagnostic in *Gaucher's disease* (Sokolowski 1932), the typical cells being found in the smears. It may also help in *malaria*; the parasites are much more numerous in the marrow red cells than in the peripheral blood, as was first observed by Ghedini (1908). In *kala-azar* the parasites may be found in monocytes in the sternal marrow (Weil and Perlès 1938).

Discussion

The value of sternal puncture in research into hæmatological pathology is evident. In clinical pathology its greatest use is in the diagnosis of leukæmia with leucopenia. The marrow-picture in leukæmia, whatever the peripheral blood-picture, is so characteristic that a diagnosis may be made with complete confidence. In other cases, even if the exclusion of leukæmia is the only use of sternal puncture, the procedure is justified by the fatal prognosis of that disease.

In the other important group of obscure anæmias, comprising the various forms of aplastic anæmia and myelosclerosis, a diagnosis cannot be made by sternal puncture. Sternal biopsy with the trephine gives much more information in these conditions, for the histology of the bone-marrow can thus be studied; but even this method may fail through the patchy distribution of the lesions both in the sternum and between this and other bones. When the diagnosis has been made, repeated sternal punctures may allow the progress of the disease to be followed.

Summary

(1) The history and technique of sternal puncture are described.

(2) An account is given of the marrow findings in 109 cases, including 13 normal, 44 of leukæmia, 7 of untreated pernicious anæmia, 6 of aplastic anæmia, and 6 of myelosclerosis.

(3) The marrow-picture in the various forms of leukæmia is described. The picture in the so-called aleukæmic leukæmias does not differ from that of the corresponding leucocythæmic leukæmias.

(4) Irradiation of the spleen in chronic myeloid leukæmia improves the marrow-picture pari passu with the blood-picture.

(5) There is a characteristic marrow-picture in the various types of anæmia, but neither aplastic anæmia nor myelosclerosis can safely be diagnosed by sternal puncture. For these a trephine specimen is required.

My thanks are due to Prof. J. McIntosh and Dr. L. E. H. Whitby for much helpful advice during the course of this work, to Dr. C. E. Lakin for his constant assistance on the clinical aspects of the cases, and to the Lady Tata Memorial Committee for financial aid.

The protocols of this work are given in an unpublished appendix, the manuscript of which has been deposited in the general library of the British Museum (Natural History), London, S.W.7.

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CHRONIC THYROTOXIC MYOPATHY CURED BY THYROIDECTOMY

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THE association of Graves's disease with a condition resembling progressive muscular atrophy has long been recognised, and the syndrome has been termed by Brain chronic thyrotoxic myopathy (Brain and Turnbull 1938). Examples of successful treatment of this condition by subtotal thyroidectomy have been reported by Ayer et al. (1934) and Starling et al. (1938). The following case, in which the presenting symptom was muscular weakness, is a further illustration of the beneficial results of operation.

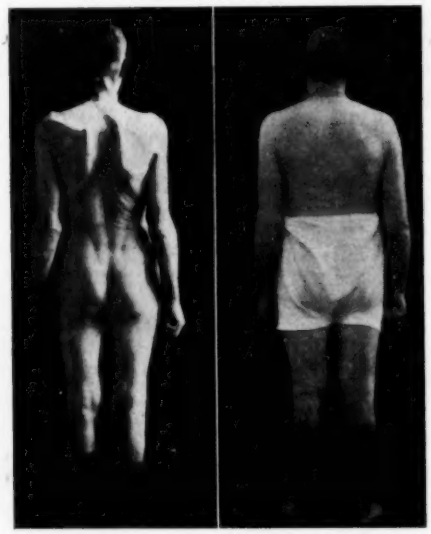
CASE-REPORT

A man, aged 50, was admitted to Addenbrooke's Hospital on May 30, 1938, complaining of dysphagia and of increasing weakness, especially affecting the arms and legs.

History.—He had worked as a brick-drawer for the past twenty-five years and, until recently, had been considered one of the strongest men in his district. His usual weight was 12½ st. There were no previous illnesses of note, but for two years he had suffered from epigastric pain, relieved by food and unaccompanied by vomiting. He was at work until November, 1937, when he first noticed difficulty in swallowing. This came on in attacks, when he could swallow neither solids nor liquids and food "went the wrong way." There was no pain in the throat and no sense of obstruction. In December, 1937, he noticed generalised muscular weakness affecting especially the limbs.

He felt well while lying in bed or sitting, but on getting up he had great difficulty in walking, and he was unable to use his arms for any length of time because of weakness. He complained of feeling hot and of sweating excessively, especially at night. His condition progressively deteriorated until just before admission, and he had found it very difficult

to climb stairs and impossible to get out of doors. His weight had fallen to 10 st. 9 lb. The appetite had always been good, and he would not admit that it had been larger recently. He had noticed palpitations, but not breathlessness, precordial pain, or swelling of the ankles. Recently he had become nervous and restless and found he "could not keep still." His speech had become jerky and his voice high-pitched. He had noticed no swelling of the neck and no prominence of the eyes; nor had these been observed by any relations or friends. He denied domestic or financial worries of any kind. There was no family history of goitre or muscular disease.



A B

Chronic thyrotoxic myopathy: (A) before operation, showing symmetrical muscular atrophy; (B) six months after partial thyroidectomy, showing recovery from wasting.

Examination showed an obvious recent loss of flesh. His restlessness in bed was striking, as also was the continuous purposeless jerky movement of the limbs. Speech was staccato, rapid, and slightly dysarthric; the skin was moist and warm. No exophthalmos could be observed, but the eyes were slightly staring. Very slight lid-lag and lid-retraction were present, and wrinkling of the forehead was poor; convergence and blinking were normal. The thyroid gland in the neck was not visible and scarcely palpable. There were no nodules or dilated veins. No tremor or wasting of the tongue could be detected. Examination of the throat and larynx (Mr. Alfred Walford) suggested nothing to account for the dysphagia, apart from muscular weakness. The pulse-rate was 90, regular, but with a collapsing quality; blood-pressure 145/100. The apex-beat was located in the fifth left intercostal space, forcible, and 3¾ in. from the middle line; sounds pure. No abnormality was found in the cranial nerves. Both upper extremities showed, however, extreme symmetrical muscular wasting (see figure), involving especially the muscles of the shoulder-girdle and upper arm and small muscles of the hands. There was fine tremor of the outstretched hands. Power was greatly reduced in all movements. The deep reflexes were elicited and equal, but the abdominal reflexes were absent. The lower extremities showed similar symmetrical wasting and loss of power in the muscles of the pelvic girdle, thighs, and calves. The deep reflexes were normal and the plantar responses flexor. Occasional fibrillary tremors were observed in the calves at rest, and fascicular muscular twitchings were prominent on active movement. No sensory abnormality was demonstrable in the trunk or limbs.

Special investigations.—Electrocardiography showed tachycardia, sinus rhythm, and left ventricular preponderance. His blood Wassermann reaction was negative. His cerebrospinal fluid was clear, with pressure normal, globulin negative, and W.R. negative. Radiography showed swallowing, stomach, and duodenum normal. His basal metabolic rate (B.M.R.) was plus 54 per cent., and one week later plus 53 per cent.

All muscles responded to faradism and to galvanism; cathodal contraction was greater than anodal; in the legs an abnormal amount of current was needed to cause contraction.

A *diagnosis* of chronic thyrotoxic myopathy was made, and after a period of preoperative treatment by high caloric diet (increasing to 5000 calories a day) and iodine therapy Mr. Vernon Pennell performed partial thyroidectomy on July 26 under Avertin, local, and gas-and-oxygen anæsthesia. Histological examination of the gland revealed a very active hyperplasia of epithelium with some filling of the acini by intra-acinar papillary growths. The epithelium was cubical and showed the changes characteristic of thyrotoxicosis (Dr. C. H. Whittle).

Convalescence was prolonged owing to postoperative pneumonia and, later, abscess at the base of the left lung. Treatment of the abscess by postural drainage was very successful. By Sept. 16 the temperature had settled, sputum was reduced to a small quantity daily, and radiography revealed the abscess cavity to be healing. The patient began to increase in weight, and the general condition rapidly improved. B.M.R. on Aug. 10 was found to be minus 1 per cent. On discharge on Oct. 17 the temperature had settled completely and he had no sputum. The pulse-rate was 70 and the weight 11 st. 4 lb. The muscles had regained their usual size, and power was almost normal. For some weeks he had been up and about and able to perform light manual tasks.

He reported for *re-examination* at outpatients on Nov. 26 and was found to weigh 12 st. 4 lb. He was in excellent health and spirits and said that he had been for a three-mile walk on the previous day. His restlessness had entirely disappeared, and muscular development and power were normal. On Jan. 14, 1939, his weight had increased to 13 st. 1 lb., and he slept well and did not perspire; he felt energetic and equal to a full day's work (see figure).

COMMENTS

In a commentary to the paper by Starling et al. (1938) and again in an exhaustive review of exophthalmic ophthalmoplegia Brain (1938) differentiates the myopathies which on histological, biochemical, and clinical grounds are to be regarded as rare but direct manifestations of thyrotoxicosis into (1) acute thyrotoxic myopathy, (2) chronic thyrotoxic myopathy, and (3) thyrotoxic periodic paralysis. The case reported above is an example of chronic thyrotoxic myopathy, a condition in which the muscular disability simulates that observed in progressive muscular atrophy: the wasting is due to poisoning of the muscles by thyrotoxicosis and does not depend on degenerative changes in the nervous system. Some of the more important indications of thyrotoxicosis—namely, enlargement of the thyroid gland and gross tachycardia—were absent, and exophthalmos was represented only by a slight enlargement of the palpebral fissure. Restlessness, sweating, a fine tremor of the outstretched hands, and an increase in the B.M.R. were, however, present. The muscular weakness and wasting, which, although generalised, affected mainly the shoulder-girdle, the upper arms, and the small muscles of the hands,

superficially resembled that observed in progressive muscular atrophy, but the muscles of the forearms were relatively normal, and there was no evidence of motor neurone degeneration. The initial symptom of intermittent dysphagia was unaccompanied by any change in the tongue or by weakness of the orbicularis oris muscle. Fibrillary twitchings, however, were observed in the muscles of the calves and thighs, but not with the frequency associated with progressive muscular atrophy.

The result of partial thyroidectomy was soon apparent: within three months the wasted muscles had regained their normal size and contour, and within six months he felt equal to resuming his usual occupation.

SUMMARY

The patient, a man aged 50, whose usual weight was 12½ st., was admitted to hospital with dysphagia, increasing muscular weakness (especially of the limbs), and loss of 2 st. in weight. Chronic thyrotoxic myopathy was diagnosed and partial thyroidectomy performed. Histological examination of the portion removed showed very active epithelial hyperplasia, with some filling of the acini by papillary growths. After a prolonged convalescence, complicated by postoperative pneumonia and lung abscess, the patient regained his strength and weight.

We wish to thank Dr. Laurence Martin for his helpful advice in the management of this case, and various members of the staff of Addenbrooke's Hospital for the investigations performed.

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CLINICAL AND LABORATORY NOTES

INTERMITTENT VENOUS OCCLUSION

A MODIFIED APPARATUS

By W. J. Kolff, Arts

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Encouraged by the good results of Collens and Wilensky (1937) in the treatment of peripheral vascular disease by intermittent venous occlusion, we constructed in June, 1938, an apparatus for carrying out this treatment which has proved highly satisfactory. When our attention was called to the paper of Wilson and Ogston (1938) we found that the apparatus they described was generally similar to our own. For the working principles of the apparatus their paper should be consulted, only the technical differences being given here.

A garden-hose nozzle is attached to a round water tap and is fitted with an all-metal cock which regulates the flow (fig. 1). The cock allows the tap to be kept fully turned on, so that there is no chance of the water gradually stopping, as is likely to happen when a tap is running slowly. A constant-level gauge can be dispensed with.

The water runs directly into the lower bottle (fig. 2), and there is therefore no possibility of water and air meeting in the connecting tube. This tube can if necessary be hung over a bracket which projects from the wooden stand. Over this bracket all the tubes are led, so that the upper bottle can be put at various levels for regulating the pressure without making the tubes kink, this being further avoided by keeping the tubes near to each other. The upper bottle is an ordinary irrigator fixed to the wooden stand. Both limbs of the siphon run over the bracket together with the connecting tube, so that the water rises simultaneously in the connecting tube and the proximal limb of the siphon. The siphon is attached to the sides of the upper bottle. By tilting the siphon more or less (fig. 3) one can regulate the difference in level between the top of the siphon bend and the bottom of the irrigator, and so vary the time during which the maximum pressure is maintained.

The outflow of the siphon is directed as nearly as possible vertically. The air from the lower bottle is led to the cuff. Leading the air-conducting tube upwards

Fig. 1—Tap with garden-hose nozzle and metal cock for regulating the flow.

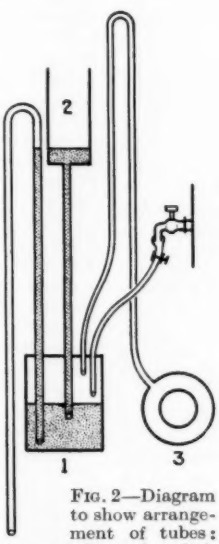

Fig. 2—Diagram to show arrangement of tubes: 1 = bottle. 2 = irrigator. 3 = cuff.

Fig. 3—Apparatus working with a pressure of 80 cm. water. The siphon is tilted so that the maximum pressure is maintained for only a very short time.

to a point above the top of the siphon makes it impossible for water to enter the cuff even if it should develop a leak. No water-trap is therefore required. For the sake of cheapness a football bladder bandaged to the limb can be used instead of the proper cuff if desired.

We have had good results with this apparatus in 1 case of arteriosclerosis and intermittent claudication; 2 cases of thrombo-angiitis obliterans; 5 patients with varicose ulcers (1 with diabetes); and in 2 out of 4 patients with arteriosclerosis and diabetic gangrene. In varicose ulcers and badly healing amputation stumps a considerable increase in exudation was seen during the intermittent occlusion. This was found to be a favourable sign.

I should like to thank Prof. L. Polak Daniels, director of the medical department, for his coöperation.

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M. & B. 693 IN MALARIA

BY R. PAKENHAM-WALSH, D.M. Oxfd, D.P.M.
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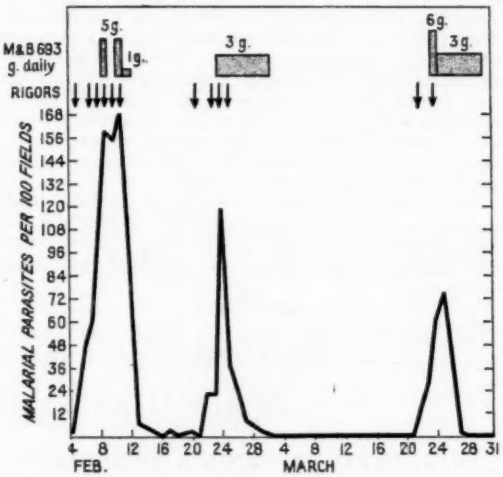
A. T. RENNIE
LABORATORY TECHNICIAN AT THE HOSPITAL

UP to the present no report has been published in this country * on the effect of M. & B. 693 on the malarial parasite. The accompanying chart, showing the effect of treatment on the rigors and parasite counts of a general paralytic inoculated with benign tertian malaria on Jan. 20, 1939, should therefore be of interest to anyone contemplating a more extensive investigation of this subject. It is somewhat similar to that given in our account of the action of sulphonamides in malaria (*Lancet*, 1938, **2**, 79).



A further relapse took place on April 23, for which quinine was given.

The general paralytic undergoing treatment is often infected with coccal organisms besides spirochætes and malarial parasites. The psychiatrist may then be faced with the problem of destroying the cocci without checking the malaria prematurely. The chart suggests that M. & B. 693 should be given sparingly if it is desired to complete an uninterrupted course of malarial treatment.

We wish to thank Dr. J. D. Silverston, medical superintendent of the hospital, for permission to publish this case; and Messrs. May and Baker Ltd. for supplying the drug.

MEDICAL SOCIETIES

ROYAL SOCIETY

AT a meeting of this society on June 8 Prof. Freiherr von VERSCHUER (Frankfurt a. M.) spoke on

Twin Research

Francis Galton, he said, was the founder of human hereditary biology, and in 1875 he read a paper calling attention to the importance of twins for distinguishing between the effects of Nature and Nurture, or heredity and environment. From the existence of two kinds of twin—one kind no more alike than ordinary sibs, the other kind maintaining a noteworthy likeness despite differences in the mode of life—Galton deduced the paramount importance of innate structure in controlling the destiny of the individual. Except by Thorndyke in America, his ideas were not followed up till after the war, and the first serious contributions to twin pathology came from Siemens in 1924. Today there were hundreds and even thousands of papers on the subject from every scientific country in the world.

Scientists early learnt to distinguish between twins born in one set of membranes and twins born in two, and thought that this was a method for distinguishing between one-egg (EZ) and two-egg (ZZ) pairs. This was now known to be a fallacious method, and the two kinds of twins were now distinguished by comparing a large number of characteristics which were known to agree in EZ and to differ frequently in ZZ pairs. The characteristics chosen were not necessarily the same for all races. For instance, eye colour and hair colour were useful in England and Germany because they agreed in EZ, while there was a large range of variation in ordinary sibs and ZZ. In races with universal dark pigmentation, such characteristics would obviously be useless. A large number of characteristics were necessary, because supposing we only took three—eye colour, hair colour and blood-group—we should find that not only the EZ agreed, but also some of the ZZ pairs. Similarly, skin folds, papillary patterns, &c., lost much of their value for diagnostic purposes because of the frequency with which ZZ are as alike as EZ.

Referring to the reliability of the modern method based on the comparison of independently variable characteristics, Prof. Verschuer said that it had been proved by blood-group investigations. Many hundreds of EZ diagnosed in his clinic had been submitted to serological investigation in an independent laboratory and there was never a single case of difference. Furthermore the group of ZZ showed the same percentage of agreement and disagreement as ordinary sibs; whereas if mistakes had been made and EZ pairs had been included in the group of ZZ, the percentage of agreement would have been too high.

After establishing the validity of their methods of diagnosis, the next step had been to test the textbook statements about the fœtal membranes. More than

* Since submitting this article for publication we have had an opportunity of seeing a report in which the action of M. & B. 693 in ape malaria is recorded (Chopra, R. N., and Das Gupta, B. M., *Indian med. Gaz.* April, 1939, p. 201).

ten years ago, placentas were carefully collected, injected and examined microscopically and the results were compared with those later obtained by resemblance diagnosis. Of 32 cases with a single chorion and circulatory anastomoses, all were EZ. Of 100 cases with two chorions, 76 were ZZ and 24 were EZ. If injection showed an anastomosis between the circulations and microscopical examination proved that the chorion was single, the twins must be EZ. On the other hand, the presence of two chorions proved nothing, since 24 out of 56 EZ had two chorions.

Theoretically it was possible to imagine monovular twins differing in their hereditary structure owing to some unevenness in the distribution of nuclear material. Practically, this did not occur. In plants it was possible to show that differences in structure in strains of identical heredity were due to the environment. In man a direct proof was impossible. But granted that serological control proved the accuracy of the diagnostic methods, not once in their series of monovular twins had there been any disagreement in known hereditary characteristics. The final proof was that homologous sides of the bodies of EZ pairs were more alike than opposite sides of the same body. Most emphatically, mirror-image resemblance was not a regular occurrence in twins; differences between them were environmental in origin and not due to inequalities in the distribution of genetic material.

Prof. Verschuer then showed slides, illustrating the different working of the same genes on the two sides of the body in EZ pairs. He cited a number of instances of the extraordinary degree of resemblance which sometimes occurs, and he vouched for a case where two conductors who had studied and lived apart for twenty years, changed over in the middle of an orchestral concert without orchestra, critics or audience realising that any change had occurred.

Discussing his more recent work on tuberculosis, he pointed out the difficulty of producing a convincing story owing to the natural variability in the course of the disease. In his total material of 80 EZ, 52 resembled each other in the course of the disease and 28 differed; while in 125 ZZ pairs, 94 differed and only 31 resembled each other. In a smaller series which came nearer to being a true random sample, 31 out of 45 EZ resembled each other and 14 differed; the corresponding figures for 118 ZZ being 27 resemblances and 81 differences. The proportion of EZ tended to be high in any series which was compiled by asking patients whether they were twins or not, since a certain proportion of ZZ tended to forget in later life that they were twins, owing to their "not being the proper kind."

This part of the lecture was illustrated by a number of radiograms showing the similar course of the disease process in EZ, including the interesting rarity of both members of an EZ pair with tuberculosis of the os calcis. Resemblances in the course of the disease were even greater than could be expressed in tabular form, the prognosis of concordant tuberculosis in EZ being much worse than in ZZ. Where EZ twins differed in their relation to tuberculosis, an environmental explanation could always be found. On the other hand in many ZZ pairs living under identical conditions, one member would develop tuberculosis and the other not.

It was difficult to get true random samples of twins and results from selected samples could be misleading. Luxenburger, working on schizophrenics, got the date of birth and birthplace from the hospital records and wrote to the birth registries asking whether the patient was a twin or not. With the help of an elaborate organisation the after-history of the other member of the pair was then traced. Very large numbers were needed for this troublesome method, since only one patient in sixty turned out to have been born a twin, in only one in two or three cases was the other member of the pair still alive and only one in four of the much diminished sample turned out to be an EZ pair. As an example of the working of this method, some 13,000 hospital records of patients with rheumatism led to 12,600 answers being obtained from the registries, of which some 11,000 were usable. This led to some 84 twin pairs of the same sex being discovered, both partners being alive in only half that number.

An easier method was to get the names of all twins from the registries, in a definite period and district, and try to persuade them to come up for examination. A further technique of study was introduced by Gottschaldt who started holiday camps for twins, one on the North Sea, the other on the Baltic, where the reactions of the pairs could be closely noted by trained observers, nurses and psychologists. Yet another important contribution was made by Newman in the U.S.A., who collected a series of EZ pairs where the two partners had been separated at an early age and had grown up in very different environments.

Prof. Verschuer concluded his lecture with a quotation from Galton. "Many a person has amused himself with throwing bits of stick into a tiny brook and watching their progress; how they are arrested, first by one chance obstacle and then by another; and again how their onward course is facilitated by a combination of circumstances. He might ascribe much importance to each of these events, and think how largely the destiny of the stick had been governed by a series of trifling accidents. Nevertheless all the sticks succeed in passing down the current, and in the long run they travel at nearly the same rate. So it is with life, in respect to the several accidents which seem to have had a great effect upon our careers. The one element, that varies in different individuals but is constant in each of them, is the natural tendency; it corresponds to the current in the stream and inevitably asserts itself."

EDINBURGH MEDICO-CHIRURGICAL SOCIETY

AT a meeting of this society on June 7 Mr. W. C. WILSON and Dr. C. P. STEWART read a paper on

Blood-chemistry in Burns and Other Surgical Conditions

They had examined the blood-chemistry in 41 cases of burning injury, 10 of which were extensive. The main changes were a fall in serum-sodium, a rise in serum-potassium, blood-chlorides, urea and non-protein nitrogen, and an occasional increase in corpuscular concentration. The serum-chlorides fell while the blood-chlorides rose. These changes began within a few hours of injury but there was considerable variation in the duration and degree of the changes. Special study had been made of the fall of serum-sodium. The fall began within two hours of injury and in cases of burns of moderate extent the lowest level was reached between twelve and thirty hours; the normal level was regained about fifty hours after injury. After extensive burns the fall was not always pronounced during the first six hours but

became very steep in most cases at a later stage. There were parallel changes in the sodium of blister fluid and cerebrospinal fluid and evidently sodium was lost from other extracellular fluids as well as from blood-serum.

The blood changes were rapidly corrected by administration of desoxycorticosterone acetate (D.O.C.A.). This drug also had a beneficial action on circulatory failure—an action which, though sometimes definite and occasionally dramatic, was inconstant. It was shown that the circulatory failure associated with shock after burns was not due merely to the low level of serum-sodium nor to any other change in blood-chemistry. Animal experiments suggested that the sodium loss from extracellular fluids took place in injured tissues and was independent of any action of the kidneys or of the central nervous system. The sodium loss was also not due to any inhibitory action on the suprarenal cortex. The evidence at present available suggested that sodium was lost into the cells of damaged tissues, but some of the loss could be accounted for by the passage of sodium into the red blood corpuscles. The action of desoxycorticosterone acetate in restoring the sodium of extracellular fluids and in correcting the other blood changes was confirmed by animal experiment. This action was found to be surprisingly rapid—normal levels were reached within forty-five minutes of intramuscular injection.

Mr. Wilson and Dr. Stewart also gave an account of blood-chemistry changes and the effect of D.O.C.A. in other surgical conditions associated with grave circulatory failure, including acute intussusception in infants, acute intestinal obstruction following generalised peritonitis, and acute pyelonephritis. They showed that when circulatory failure was due mainly or solely to bacteriological intoxication D.O.C.A. had no obvious effect on circulatory efficiency, although if the serum-sodium were previously low a normal level was rapidly regained. In other instances, particularly in acute intussusception and acute intestinal obstruction without overwhelming bacteriological infection, D.O.C.A. appeared to exert a favourable influence on the peripheral circulation.

FACULTY OF RADIOLOGISTS

AT the first annual meeting of the faculty, which was held in Liverpool on June 9 and 10, with Dr. R. E. ROBERTS, the president, in the chair, a paper on

Some Problems of Diseases of Bone

was read by Dr. J. L. A. GROUT. He pointed out that the diagnosis of bone conditions is particularly difficult because there are no appearances which are absolutely typical of any disease or even of any group of diseases. Radiography shows the changes that have taken place—osteoporosis, increased density or the laying down of bone beneath the periosteum—but cannot show the mechanism which has produced these changes. It is never wise to say that a particular picture is always associated with a particular pathological change, for subsequent operation or an unexpected response to treatment will too often prove that such a diagnosis given with great confidence is incorrect.

Bony Changes in Anæmia and Leukæmia

Dr. C. G. TEALL read a paper on a radiological study he had made of the bones in children with blood diseases based on Parson's classification. In his opinion demonstrable changes are only found in the subacute and chronic blood diseases when they are due to secondary changes in the bone-marrow. The hæmolytic anæmias are those where blood changes are seen and the earliest radiographic sign is osteoporosis at the metaphysial end of the long bones, a change which it is not easy to distinguish. Cooley's anæmia, said to be found only in children of Mediterranean parentage, and the sickle-cell anæmia of negro children, are two conditions in which typical bony changes are seen. These are absorption, expansion of the shaft of long bones, and, in the skull, osteoporosis in the frontal region with striations on the vault. Secondary leukæmic deposits appear in three forms—streaky bone-absorption followed by generalised osteoporosis and cortical absorption, subperiosteal infiltration with new bone formation, and a rare condition difficult to explain where there is a decrease in density behind the metaphysis similar to that seen in the anæmias and scurvy, probably a result of interference with growth.

The Adult and Fœtal Circulation

Dr. A. E. BARCLAY gave a demonstration of the circulation by means of cineradiography and serial radiograms. The umbilical veins of fœtal sheep and cats just delivered by cæsarean section had been injected with Thorotrast, Lipiodol or Uroselectan-B. The femoral artery and vein and the vena cava had also been injected. The circulation in the adult animal was shown by injecting the superior and then the inferior vena cava. The course of the opaque substance in the fœtus showed the relationship of the ductus arteriosus to the normal vessels and also the blood passing through the ductus. Considerable difficulty was at first experienced, but the accidental injection of the femoral artery in attempting to find the vein in a small fœtus showed the opaque material flowing up the artery and passing through the ductus. It was also possible to demonstrate the crossed circulation in the right auricle. Injection of the inferior vena cava showed that circulation was from the right auricle to the right ventricle and thence to the conus arteriosus and through the pulmonary stem, but at the same time some opaque material outlined the aorta, showing that it must have passed through the ductus. Dr. Barclay thought that this showed conclusively that although the foramen ovale tends to close at birth the ductus remains patent until the lungs are well expanded.

The Cancer Problem

On the second day of the meeting different aspects of cancer were discussed by Prof. HENRY COHEN as a physician, Sir ROBERT KELLY as a surgeon, Prof. W. M. FRAZER as a public-health official and Dr. RALSTON PATERSON as a radiotherapist. Prof. COHEN said that the diagnosis of cancer still depends on the care with which a history is taken and on the clinical examination. No specific test for cancer has yet been found and if there were one it would probably only be used when clinical signs had attracted attention, and it might lead to much distress before the primary site was discovered. At present the radical treatment of malignant disease may be described as anatomical, or, on the analogy of a battle, it may be said that surgery aims at removing the entire battlefield, aggressor and defender alike. The physician must search for another line of approach, and for this it is necessary to review recent research. The production of experimental cancer by carcinogenic agents, the curious phenomena of tumours produced by a virus, particularly the Shope papilloma and the part played by heredity, all suggest that ultimately

cancer may be prevented rather than cured. The chemical changes studied by Warburg, who demonstrated glycolysis in the absence of oxygen in cancer and other rapidly growing cells suggest possible therapeutic methods. More recently the demonstration that, whereas the hydrolysis of normal cells produces only lævorotatory amino-acids, hydrolysis of malignant cells produces high proportions of dextrorotatory amino-acids, the change increasing with the degree of malignancy, suggests an intrinsic and essential chemistry of malignancy. There are also certain clinical symptoms, such as the condition known as the Plummer-Vinson syndrome, which are definite precursors of cancer and which can be prevented by treatment of the underlying condition, in this case by the administration of iron. In conclusion Prof. Cohen said that although much is known and progress continues the key of the gate leading to the path to complete success in cancer therapy has yet to be found.

Sir ROBERT KELLY was particularly interested in the unanswered questions of malignant disease. Why when the rest of the alimentary tract is so often affected should the small intestine be almost immune? Why should the lower lip be a common site and the upper lip a rare one? How can an early diagnosis always be expected when it may be necessary to wait for months after a secondary manifestation has been found before the primary declares itself? The difficulty of diagnosis and the uncertainty of prognosis, he said, are facts very difficult to influence.

Prof. FRAZER discussed the probable effect of the Cancer Bill on the care of the cancer patient. He looks forward to improved coöperation between the different branches of medicine, and believes that the scheme of special clinics and the responsibility of the local authorities will lead to great improvements. He pointed out, however, that the effect of administrative advances is always determined by the state of medical knowledge, and improved facilities for treatment can only ensure that the patient gets the best treatment at present available.

Dr. RALSTON PATERSON pointed out that the previous speakers had all agreed that at present surgery, radium and X rays are the only recognised methods of treatment. The place of surgery and radiotherapy is now becoming clear, and it is possible to define which types of malignant disease should primarily have surgical and which radiation treatment. When the possibility of cure is considered it is clear that the sites for which much can be expected are breast, mouth, uterus and skin; in other sites cure can be looked for in favourable cases, but the proportion seen in an early stage is so small that the cure-rate is very low. Dr. Paterson therefore thinks it important to regard the treatment of cancer as divided into two methods, curative and palliative. Where curative treatment is undertaken severe reactions may be justified by the possibility of cure, but palliative therapy must be planned as such from the beginning and should not increase the discomfort suffered by the patient.

Mr. G. F. STEBBING thought the speakers rather pessimistic and hoped for better results.—Mr. B. W. WINDEYER urged the need for convalescent accommodation for patients after radiation treatment.

REVIEWS AND NOTICES OF BOOKS

The Dysenteric Disorders

By PHILIP MANSON-BAHR, C.M.G., M.D. Camb., F.R.C.P., senior physician to the Hospital for Tropical Diseases, London; consulting physician to the Colonial Office and Crown Agents for the Colonies. London: Cassell and Co. 1939. Pp. 613. 25*s*.

IN this volume Dr. Manson-Bahr has undertaken with amazing zeal a comprehensive review and analysis of the dysenteries, the various forms of colitis, sprue, the helminthic diseases of the bowel, and the different diarrhœas which form such a complex assembly in practical medicine. The importance of such a work requires no emphasis. During the last few decades it has become recognised that many diseases of the bowel, presenting similar symptoms, may be caused by entirely different agents, and that successful therapy depends on their accurate differentiation.

The opening section is concerned with methods of investigation, including a useful chapter on the sigmoidoscope, and with a historical and geographical survey of the dysenteries. The next section deals systematically with true bacillary dysentery, with the protozoal infections, amœbic, ciliate, flagellate, coccidial, plasmodial and leishmanial, with the helminthic infestations, and with the infective diarrhœas such as food-poisoning and cholera. The author next discusses the steatorrhœas and the various forms of colitis. The final section covers the further causes of dysenteric diarrhœa and the manifestations of malignant disease of the colon, polyposis, actinomycosis, tuberculosis, syphilis, lymphogranuloma and Crohn's disease, with a chapter on the mechanical causes of diarrhœa. There is an appendix by the author's assistant on the intestinal protozoa and on technical methods for the isolation, cultivation and identification of the various pathogenic agents, and, finally, there is a useful classified bibliography. The work is largely based on Dr. Manson-Bahr's personal experience, but the work of others receives due emphasis. The volume is well illustrated with photographs, drawings and coloured plates, many of which testify to the author's artistic ability.

Personal Aggressiveness and War

By E. F. M. DURBIN, B.A.Oxfd, and JOHN BOWLBY, B.Chir. Camb. London: Kegan Paul, Trench, Trubner and Co. 1939. Pp. 154. 5*s*.

MOST of us these days find it hard to take an objective view of the causes and nature of war, and any help that psychology can give us will be correspondingly welcome, though not necessarily agreeable. The authors of this book write with an admirable detachment calculated to bring the conception of war into both historical and social perspective. Their first part is an essay in which they "describe and analyse the general psychological forces lying behind the timeless and ubiquitous urge to fight and kill." In their second part, which has the lion's share but is still modestly described as an appendix, as when it appeared in the symposium "War and Democracy," they give in detail the psychological evidence for their theories.

They examine the contentions that either capitalism or nationalism may be the fundamental cause of war, and find war to be of more primitive origin than either. War, they think, is "due to the expression in and through group life of the transformed aggressiveness of individuals," and its cure is not therefore to be sought in remedying the symptoms of transformed aggression such as class-hatred or nationalism, but

in diminishing the aggression itself. This can only be done by diminishing the frustration of the child. Charity, in fact, should begin not only at home but in one particular room, and that the nursery. This thesis will inevitably recall Glover's "War, Sadism and Pacifism."

In the second part, Bowlby considers war in particular relation to Zuckerman's studies of behaviour in monkeys, and Isaacs's observations on children. He compares the sexual fights on monkey hill and amongst primitive peoples with the behaviour of English sailors on Pitcairn Island, and the authors share with Hobbes the view that without government man's passions and rivalries make his life "solitary, poor, nasty, brutish and short." They point out that aggression in childhood is singularly violent, is more manifest in those who have been the subject of violence, and is provoked either by threats to possessions, by jealousy or by situations "in which the child frustrates himself by his own incapacities or wilfulness." They also consider aggression in relation to the scapegoat in the light of recent Jewish persecution.

The book as a whole deserves to be widely read, for it points the way to the constructive treatment of what is clearly an endemic but we hope, with the authors, not an incurable disease.

Richtlinien Practischer Orthopädie

By Dr. ALBERT LORENZ. Vienna: Franz Deuticke. 1939. Pp. 464. R.M.15.

THIS textbook is intended for the specialist. Its interest lies in the clear presentation of the practical problems of orthopædic surgery, and particularly in the analysis of the development of the orthopædic technique of the author's famous father, Adolf Lorenz, the pioneer of the "bloodless reduction" of congenital dislocation of the hip. There are 38 sections, of which 3 are introductory and 6 are devoted to general principles. In each a concise summary is given of the steps by which modern technique has been attained, with the names of those who have contributed to its evolution. No other bibliography is supplied. Methods of treatment and operations are set out in detail. The few illustrations are clear line drawings.

The author's comments are shrewd. He reminds us that no advance in operative technique entitles the orthopædic surgeon to neglect aftercare, which embraces every type of apparatus and every form of physiotherapy, and that no operative procedure should be more dangerous than the disease it treats, using this postulate as an argument against open reduction of congenital dislocation of the hip. He has a poor opinion of the spontaneous reduction of this condition by splinting, popularised by Putti, and he does not mention the simple Forrester-Brown splint, which has given admirable results in the large Bologna clinic for the last seven years, as well as in the hands of its inventor. He puts two years as the ideal age for treatment, though he would manipulate and plaster quite young children. As to open operations most experienced surgeons would agree with Dr. Lorenz that roof-grafts should be reserved for cases which are reducible but unstable, and that the joint should be explored only when obvious obstruction in the soft parts hinders reduction in a young subject. Cases in which the head cannot be brought easily opposite the acetabulum are suitable for the palliative bifurcation osteotomy introduced by Adolf Lorenz. This form of section is convenient for cases in which the small trochanter is already opposite the acetabulum, but if the dislocation is a very high one the subtrochanteric division of Schanz produces the best results.

Dr. Lorenz notes that in congenital club-foot manipulation and plaster-of-paris have also replaced open operation except in resistant cases. He thinks that manipulative reduction is rarely possible without tenotomy of the tendo Achillis, *after* correction of the front of the foot. Over-lengthening the tendo Achillis should be avoided, especially for spastic cases, as the resulting calcaneo-cavus is far more disabling than the original equinus. For torticollis open dissection followed by plaster fixation is recommended.

In the section on plaster-of-paris, the reader is warned that unpadded plasters are only safe for inpatient work, and that plaster is not a corrective medium but only a method of fixation when correction is already attained. Massage and gymnastic exercises without elaborate apparatus are favoured. No mention is made of exercises in a warm pool for the correction of spastic contractures and faults of balance; for cerebral palsies only tenotomies and plaster are advised.

The clear type and short paragraphs make this manual far more readable than many German books of its size.

Fundamentals of Internal Medicine

By WALLACE MASON YATER, M.D., M.S. (in medicine), professor of medicine and director of the department of medicine, Georgetown University school of medicine. London: D. Appleton-Century Company. 1938. Pp. 1021. 35*s*.

THE student in his first clinical years must be a little bewildered by the number of textbooks designed to introduce him to the science and art of medicine; no doubt his choice is influenced by local custom and his tutor's preference. This new work from the Washington school cannot claim to fill any particular gap in medical teaching which its predecessors have left open or to supply any special need, but it is none the less excellent. It has the merits of a homely and didactic style, with a reasoned approach and a balanced presentation of material; it is well illustrated and it contains many useful wrinkles and much sensible advice. A slight fussiness of detail, especially in regard to tables, has made it perhaps a little too large for the student's armpit. Those still undecided among the competitors for their favour and those who would like or need a change would do well to consider this new textbook.

Les tumeurs osseuses du nez et des sinus

By C. E. BENJAMINS. Monographies otorhinolaryngologiques internationales. Bordeaux: Éditions Delmas. 1938. Pp. 306. Frs.60.

THE author classifies these tumours as follows: (1) benign tumours, including osteoma, osteochondroma, osteofibroma, angio-osteoma, fibro-osteoid tumours with atypical calcification and tumours of osteitis fibrosa; (2) malignant tumours, including osteosarcoma, osteochondrosarcoma and osteoblastic epithelioma. Some of these are more generally regarded as inflammatory growths than as genuine neoplasms. Thus among the tumours of osteitis fibrosa neither Recklinghausen's disease caused by dysfunction of the parathyroid glands, Paget's disease, nor leontiasis ossea can properly be considered as true neoplasms. All these tumours of the bones are rare, and this little monograph gives a useful description of their pathology, symptoms, and methods of treatment. It contains numerous illustrations of cases, specimens, and photomicrographs.

THE LANCET

LONDON: SATURDAY, JUNE 17, 1939

ABORTION AND PROFESSIONAL SECRECY

THE report of the Interdepartmental Committee on Abortion, which we summarised last week, displays afresh the conflict of opinion on the related aspects of professional secrecy. On the one side there is the tradition of non-disclosure in its absolute form, the reluctance of the medical practitioner to perform the functions of a detective, and the suspicion that the association between public health and the police has already gone far enough. These views definitely discourage any idea of compulsory notification, whether of all abortions or merely of therapeutic abortions. Moreover, they are not the views of medical men only. One member of the committee, Mrs. THURTLE, affirms in a vigorous minority report that attempts to make the medical profession coöperate with the policeman in reporting any suspected case of criminal abortion will simply drive the evil further underground and will deter women from obtaining medical advice when they most need it. Mrs. THURTLE deprecates as retrograde any step that might undermine the faith of the women of this country in the trustworthiness of the medical profession. On the other side there are those who, knowing the grave menace of maternal morbidity, feel that medical practitioners by their inactivity aid and abet the furtive and dangerous operations of the criminal abortionist. Six members of the committee (including Lady RUTH BALFOUR and Sir COMYNS BERKELEY) sign a reservation to the full report in order to emphasise the historic observations of Mr. Justice AVORY that the desire to preserve professional confidence "must be subordinated to the duty which is cast upon any good citizen to assist in the investigation of a serious crime."

Mr. Justice AVORY, it will be remembered, issued this warning when charging the grand jury in 1914 in a case where three doctors had attended a patient who had clearly died as the result of an unqualified woman's illegal interference. To one at least of the three the dying patient had confided the abortionist's name. No information was given to the police, no deposition was taken, and no death-bed statement was secured which could have been used in a court of law. A statement made by the deceased patient to a doctor would not have been evidence; but Sir HORACE AVORY was concerned to point out that, when a person is seriously ill, and in the opinion of a medical man is unlikely to recover, the evidence of such a person can be taken by a justice of the peace. The learned judge's complaint was that the ends of justice were defeated because none of the doctors had given the police the opportunity to secure the essential evidence on which the alleged abortionist could be convicted. The sequel is on record and the committee's report recalls it. Next year the British Medical Association resolved that a medical practitioner should never voluntarily disclose, without the patient's consent, information obtained from the patient in the course of professional duties. In 1916 the Royal College of Physicians, after taking counsel's opinion, passed a like resolution. It recommended that a doctor who was convinced that criminal abortion had been practised on his patient should urge her to make a statement which might be taken as evidence against the abortionist, provided that the patient's chance of recovery was not thereby impaired; but it stated that the college was advised that the medical man was under no legal obligation to urge her to make a statement, or, if he did so and she refused, to take any further action. If the patient died, the medical practitioner was recommended to refuse to give a certificate of the cause of death, and to communicate with the coroner.

There the matter was left, and there, it seems, the interdepartmental committee as a whole is content to leave it still. The committee examines various suggestions for facilitating the conviction of the criminal abortionist. If the identity of witnesses were concealed, there might be a greater readiness to give evidence. This suggestion does not contemplate an act of Parliament to upset the existing law of forensic publicity; it proposes rather the adoption of a rule of practice akin to that whereby magistrates and judges appeal to the press not to publish the name of the vital witness in blackmail prosecutions. This practice is said to have done much to stamp out the abominable crime of blackmail; but the committee regards the analogy as imperfect. The patient who has consented to a criminal abortion is in law an accomplice; the witness in the blackmail prosecution is not. The distinction is rather technical. If the witness in blackmail cases is not *particeps criminis*, he has nevertheless usually done something to be ashamed of and can be cross-examined with a view to discrediting his character and the value of his testimony. Another suggestion is that the patient should be legally exempt from prosecution; she would then cease to be an accomplice and the requirement of corroboration would disappear. This proposal, too, the committee declines to accept, since it might encourage a woman to seek abortion. Many people will nevertheless think that the legal authorities might simplify the position in some degree. It is ridiculous to pretend that the patient is in danger of prosecution when everybody knows that a witness who gives evidence for the Crown in such a case will not be prosecuted. Almost the only suggestion that the committee accepts is the grant of authority to issue a warrant to search the premises of a person who is suspected on reasonable grounds to be an abortionist. At present the police have no such power of search unless they have entered the premises for the purpose of making an arrest. The committee approves also the recommendation that coroners be invited to inquire with special vigilance into deaths following abortion and to satisfy themselves, so far as is possible, that there has been no criminal interference. The committee dismisses the idea of heavier sentences in cases where conviction is secured and it does not

consider that any practicable scheme for compulsory notification of pregnancy is likely to be helpful.

It may be that the views of the medical and legal professions are changing. The six signatories to the reservation already mentioned are plainly not satisfied with the negative obligation laid upon the medical man. In their opinion a doctor, especially when he comes by information as a result of his own observation and not as a result of the patient's confidences, ought to inform the police if his examinations reveal injuries or foreign bodies indicating the use of instruments or slippery-elm bark. By coöperating in the exposure of criminal abortionists, they say, the medical profession has it in its power to do a great service to the community. They believe that many doctors would welcome relief from their present dilemma in which their legal and public duty is at variance with the course prescribed by the Royal College of Physicians. They hope that the college will now re-examine its recommendation of 1916 which has had the effect of limiting the doctor's power of assisting justice to those rare cases where the patient consents to disclosure. Whether the recent report will stimulate any change of view among the lawyers it is not easy to prophesy. Here and there the layman thinks he detects signs that the law relaxes its insistence on the curiously rigid rules of evidence, and on the presumption of the innocence of the accused, where the administration of justice is in danger of being defeated. The legal and judicial authorities must make up their minds whether the frustration of prosecutions for criminal abortion is now so grave a matter as to justify departure from the ordinary standards. One may add that the police are often deterred from prosecution by the difficulty of securing conviction from juries which regard abortion as a venial offence. This public toleration of abortionists will either have to be accepted as reasonable or definitely countered. Meanwhile the doubts that may be excusable in a juryman are inconvenient in a judge, and it is to be hoped that one effect of any legal changes contemplated will be to reduce the apparent inconsistency in the attitude of different judges towards this crime.

HÆMOGLOBIN ESTIMATION

THE increasing reliance that the practitioner puts on the hæmoglobin percentage and the colour-index in determining his treatment of anæmias makes the need for the standardisation of hæmoglobinometers increasingly obvious. It is manifestly absurd that two laboratories may return reports on the hæmoglobin of the same patient which differ by as much as 20 per cent. without any hint to the practitioner that the difference depends only on the different instruments used. Thus 100 per cent. on the Haldane scale is equivalent to about 13·8 grammes of hæmoglobin per 100 c.cm. of blood, whereas the same reading on the Sahli scale is equivalent to about 17·3 g., yet readings taken with either apparatus are returned as so much per cent. More attention would perhaps have been given to this state of affairs if it affected hospitals, but in a hospital all readings are usually taken with one type of instrument and the difficulty does not arise. Nor does it affect the practitioner who does all his own estimations. It is most serious where the doctor receives reports on his patients from several laboratories, hospital or private.

A universal normal for hæmoglobinometers cannot be established with the same ease as it has been, say, for blood-urea—by taking the average of a large number of healthy people—because of the surprising variations encountered in different parts of the world. HOLIDAY and his colleagues [1] pointed out that Price-Jones found the mean of a hundred London students to be 105 per cent. on the Haldane scale and that of twenty Boston students 112 per cent., whereas other observers have reported "normals" of 112–115 per cent. Haldane for males and about 100 per cent. for females. The obvious solution to the difficulties is to discard percentages and state all results in grammes of hæmoglobin per 100 c.cm. of blood, but, as Prof. MCGRATH [2] remarked in his eloquent appeal for standardisation a few weeks ago, practitioners have become used to readings expressed in percentages and to the implications of the colour-index. The fact that a universal standard cannot well be based on averages and must be arbitrary is, however, no reason for the adoption of no standard at all. Hæmoglobinometers can be calibrated accurately enough for practical purposes by comparison with the results obtained by determination of the oxygen-carrying power or iron-content of the blood, or by photo-electric methods. Such calibrations should be the same for all types of apparatus, and it will be for different localities or different laboratories to determine their own normal in terms of this calibration. The Haldane scale has the claims of tradition to be adopted as the standard and the British Standards Institution is now producing an "absolute" Haldane scale. Pathologists should therefore state on their reports what instrument they use and how its readings correspond with Haldane. The practitioner will then at least be able to tell at once whether the reports he receives are strictly comparable.

LYMPHOCYTIC CHORIOMENINGITIS

WHILE working at Washington on St. Louis encephalitis ARMSTRONG and LILLIE in 1934 identified the virus of lymphocytic choriomeningitis. Since then the disease has been described not only in the United States but also in England, France and Japan; and there is suggestive evidence of its presence in North Africa and Eire. In some ways the name given to it is unsatisfactory, for LÉPINE, MOLLARET and KREIS in 1937 found that of a number of patients experimentally infected with the virus less than half developed nervous symptoms, although all suffered from fever. In the same year WOOLEY, ARMSTRONG and ONSTOTT obtained evidence of immunity to lymphocytic choriomeningitis in 11 per cent. of 1248 sera collected from various parts of the United States and the great majority of the positive sera were from persons giving no history of an infection of the central nervous system. Furthermore, the

1. Holiday, E. R., Kerridge, P. M. T., and Smith, F. C., *Lancet*, 1935, 2, 661.
2. McGrath, J., see *Lancet*, May 27, 1939, p. 1211.

attempt to equate lymphocytic choriomeningitis with acute benign aseptic meningitis has broken down. On the one hand only a comparatively small proportion of cases diagnosed clinically as acute benign aseptic meningitis have yielded the virus or given evidence of specific immunity. On the other hand, the clinical symptoms and pathological lesions have not uncommonly pointed to something more than merely a benign involvement of the meninges and choroid plexus. In a fatal case described by VIETS and WARREN in 1937 there was pathological evidence of encephalitis; clinically the cases described in our own columns [1] by FINDLAY, ALCOCK and STERN in 1936 also resembled encephalitis; while in the case reported in our present issue by Dr. MACCALLUM and Dr. FINDLAY the original diagnosis was one of poliomyelitis. In addition, two fatal cases of considerable importance have been described in America, by BARKER and FORD in 1937, and by MACHELLA, WEINBERGER and LIPPINCOTT this year.[2] In the former, four months after an acute episode diagnosed as lymphocytic choriomeningitis, the patient developed severe arachnoiditis which caused complete obliteration of the spinal subarachnoid space: in the latter there was also blockage of the subarachnoid space at the base of the brain, intense infiltration of the choroid plexus, and severe inflammatory changes in the subependymal tissues.

If there is still uncertainty about the clinical symptoms and pathological changes produced by the virus of lymphocytic choriomeningitis, the same is also true of the epidemiology of the disease. A number of observations, however, have been made which suggest possible means of spread. The first clue is afforded by the work of TRAUB three or four years ago, when he found that lymphocytic choriomeningitis was occurring as an acute and highly virulent epizoötic in a mouse colony kept in the laboratory. FINDLAY, ALCOCK and STERN [1] isolated the virus from the breeding stock of a mouse-fancier in this country, LÉPINE and SAUTTER found it in the mouse stock of the Pasteur Institute in Paris, and KASAHARA and his colleagues obtained the same agent from laboratory animals in Japan. An important discovery by TRAUB was that the virus of lymphocytic choriomeningitis is excreted by mice both in the urine and in the nasal secretions. He has lately reported [3] that in a mouse colony infection occurred during intra-uterine life, while young and old mice continued for long periods to excrete virus in large amounts in the nasal secretions. By this means the disease continued as an enzoötic for four years, although with considerable diminution in virulence for the members of the infected herd. In this country, too, infection has continued for four years in a mouse colony, although throughout this time the disease has remained entirely asymptomatic with no undue mortality. The virus, however, has been isolated from healthy carriers.

These observations suggest that the virus may be transmitted from mice to men, lymphocytic choriomeningitis thus having analogies with leptospiral jaundice which spreads from apparently healthy rats to men. Until recently direct evidence connecting human cases of lymphocytic choriomeningitis with infected mice was lacking. Now ARMSTRONG and SWEET [4] have isolated the virus from wild mice trapped in two houses in each of which there had been a case of lymphocytic choriomeningitis, from which the virus was isolated. Since in both instances the human patient was ill in her house for only four days before being removed to hospital, it is hardly credible that both could have infected the mice of their respective abodes. In addition, three inmates of the two houses showed immune bodies to lymphocytic choriomeningitis—a finding which suggests an exposure to infection in the home rather than a human contact infection. Nevertheless the possibility of infection passing from man to man cannot be wholly excluded in view of the isolation by MACCALLUM and FINDLAY of the virus from the nasopharynx of a patient as long as 12 weeks after the onset of the illness. In laboratories, although infection has rarely been accidentally transmitted to man, accidental infection of rhesus monkeys has taken place. In one such instance in this country two rhesus monkeys became infected, presumably through the nasopharynx, because a small amount of hay got into their cage, having fallen from a cage containing guineapigs suffering from the disease. From these observations it seems that the two essentials in controlling the spread of lymphocytic choriomeningitis are the isolation of human cases and the wholesale destruction of domestic mice. The latter conclusion should appeal especially to the feline population, but until further experiments have been made it is uncertain whether cats can be used with entire safety for the destruction of infected mice. A small proportion of spleens from adult dogs obtained at random in this country have been found to contain a virus pathologically and serologically similar to that of lymphocytic choriomeningitis, and though FINDLAY and STERN in 1937 showed that dogs inoculated intracerebrally with the virus do not develop symptoms, it now appears that they may act as carriers. The susceptibility of cats was examined by B. KREIS in the same year with somewhat equivocal results, and further observations are necessary to determine whether they too may not act as symptomless carriers.

Lymphocytic choriomeningitis differs from many other acute virus infections of the human nervous system in that extensive epidemics have not been recorded. It occurs rather in the form of foci involving two or three persons, either living in the same house or working in the same building—a fact explicable if infection is primarily from mouse to man and occasionally from man to man. But the possibility of widespread epidemics of lymphocytic choriomeningitis cannot however be entirely ruled out, since COGGESHALL [5] has found that the mosquito *Aedes ægypti* is capable of transmitting the virus by bite in 4–15 days after an infective feed.

1. Findlay, G. M., Alcock, N. S., Stern, R. O., *Lancet*, 1936, **1**, 650.
2. Machella, T. E., Weinberger, L. M., and Lippincott, S. W., *Amer. J. med. Sci.* May, 1939, p. 617.
3. Traub, E., *J. exp. Med.* 1939, **69**, 801.
4. Armstrong, C., and Sweet, L. K., *Publ. Hlth Rep., Wash.* April 28, 1939, p. 673.
5. Coggeshall, L. T., *Science*, June 2, 1939, p. 515.

ANNOTATIONS

HOSPITAL PROVIDENT SCHEME FOR LONDON

IT was announced at the meeting of King Edward's Hospital Fund for London last week that a committee appointed by the fund has prepared a scheme for the insurance of middle-class families in London against the expenses of hospital treatment. Participating hospitals will be required to keep to a fixed schedule of charges for subscribers. It may not be practicable to provide the same accommodation for subscribers at all hospitals, for example while the proposed fee should be sufficient to cover the cost of a private room at suburban hospitals, at the larger hospitals it may be necessary to treat subscribers in contributory wards intermediate between the ordinary wards and the private rooms. The benefits will be available only where the treatment is undertaken by approved consultants or specialists, of which a list will be prepared. Payments for medical attention will be made direct, and their amount will not be disclosed to subscribers. The suggested income limits are £400 for single subscribers, £550 for married subscribers with no children, and £700 for married subscribers with dependants under eighteen years, the corresponding annual rates of subscription being £2 12*s*., £3 12*s*. and £4 4*s*. The subscription will cover the whole cost of maintenance and medical and surgical treatment in hospital for a maximum period of four weeks in any one year, with grants in aid of additional specialist services and of treatment in a nursing-home. The amounts of the hospital and medical fees have yet to be settled. There will be certain exclusions from the scheme, for example mental diseases, maternity, pulmonary tuberculosis, tonsils and adenoids in children, and infectious diseases. New members will not be entitled to benefit until they have subscribed for six months, and they will not be admitted if they are over sixty-five. The scheme is at present tentative, and the final approval of the hospitals, the British Medical Association and other interested bodies will be required before it can be put into operation, but if general agreement can be obtained it is hoped to launch it in the autumn.

SUPPURATIVE PERICARDITIS

As Bigger[1] has lately pointed out, there are two curious facts about suppurative pericarditis: one is the comparative rarity with which it is diagnosed during life, and the other is the hesitant attitude of many physicians towards surgical treatment even when a diagnosis is reached. The difficulty in diagnosis arises because pericarditis often develops late in the course of some grave general infection like osteomyelitis or pneumonia, in which a worsening of the patient's condition may be more readily attributed to the natural progress of his disease than to the onset of a fresh complication. It is true that under these conditions it may be hard to appreciate such classical symptoms as epigastric pain and vomiting followed by an increasing dyspnœa and pain on swallowing; but once an effusion has reached substantial size the physical signs of heart tamponade are clear and distinctive. The cardiac shadow is enlarged, as may be readily determined by fluoroscopy, and the veins in the neck are prominent. Direct observation of the venous pressure will show a definite increase—19 c.cm. of water in one of Bigger's cases—and at the same time the arterial pressure falls.

1. Bigger, I. A., *Ann. Surg.* May, 1939, p. 763.

The first operation for suppurative pericarditis was done by Bardenheuer in 1884 and he approached the pericardium after resection of the fourth and fifth costal cartilages on the left side. It is interesting to see that Bigger still employs this approach; for ever since Curschmann showed that a pericardial effusion must always cause a close approximation of the heart to the anterior wall of the pericardium most surgeons have preferred to drain the sac from the costoxiphoid angle. It is undoubtedly true that the costoxiphoid angle is the only safe place for paracentesis of the sac, and the advantages of dependent drainage are just as great here as in any other form of suppuration. These points are discussed in detail in a monograph by Marfan.[2]

Early operation for empyema thoracis is now commonly and correctly deprecated, save in certain exceptional circumstances; but there is every reason for early intervention for pyopericardium. Drainage may be carried out rapidly under local anæsthesia with a minimum of general disturbance, and it now seems clear that the earlier the operation is done the less likely is constrictive pericarditis later. Bigger's paper is illustrated by some interesting kymograms showing the return of normal cardiac contraction eight months after one of his five successful operations.

DROWNING

DROWNING is such a common accident, and the art of resuscitation has evolved so steadily and satisfactorily, that it comes as something of a shock to realise how little we know about the actual process. Experiments on dogs have now been carried out by a group of Canadian workers[3] with the object of following the reflex responses and changes in blood-pressure and blood gases during drowning. Their findings show nothing unexpected, in the sense that all the changes, with one possible exception, seem reasonable, but they confirm some points that the non-specialist observer might only have suspected and establish certain time-relationships which probably hold roughly for human beings. Lougheed and his colleagues find that the first respiratory reaction is breath-holding, which may last for 1½ min. and is followed by "gasps." The latter may lead to filling of the lungs with water, but they usually provoke reflex spasm of the glottis so that only a few cubic centimetres of water may enter the trachea, and occasionally closure of the glottis may be so complete as to exclude water from the lungs altogether. During this phase the dog swallows rapidly and this leads to violent vomiting after 3 min. immersion. After a further 2 min. all movements cease. Relief of asphyxia within about 15 sec. of the cessation of respiratory efforts is said to ensure spontaneous recovery, though the statement seems to involve a contradiction in terms. For a short time after this artificial respiration is successful, and it must be continued for a time proportional to that which has elapsed since the cessation of spontaneous effort. As adjuvants to resuscitation adrenaline, ephedrine, Coramine, Cardiazol and other cardiac stimulants are ineffective, and venesection fails to relieve the circulation. Atropine is only helpful if given before the experiment and cocaine does not prevent laryngeal spasm. Amyl nitrite, however, is of great value in the late asphyxial period, and the addition of carbon

2. Marfan, A. B., La fonction du pericard, Paris, 1938.
3. Lougheed, D. W., Janes, J. M., and Hall, G. E., *Canad. med. Ass. J.* May, 1939, p. 423.

dioxide to the inspired air not only increases the efficacy of artificial respiration but improves the post-experimental condition of the animal. For some reason which is not well understood, the carbon-dioxide content of the blood falls after a preliminary rise, and if this tendency is enhanced by hyper-ventilation—e.g., by allowing the animal to breathe occasionally during a period of asphyxia—the condition of acarbia becomes pronounced. In accidental drowning the struggles of the victim may bring him intermittently to the surface and closely simulate this state of affairs. Carbon dioxide, therefore, supplies a deficiency as well as stimulating the respiratory centre.[4] The only other aid to resuscitation which was found useful is a tracheal catheter to counteract spasm of the glottis. It is noteworthy that whereas complete asphyxia for 5 min. was fatal to these dogs, relief from respiratory obstruction for 5 sec. out of every minute was sufficient to keep them alive for at least half an hour. The time-relations in this experiment may be slightly abnormal on account of the anæsthetic, but the striking difference made by even the slightest opportunity for breathing lends point to the plea of the editor of the *Canadian Medical Association Journal* that in accidental drowning artificial respiration should be continued until rigor mortis sets in.

NON-TUBERCULOUS MESENTERIC LYMPHADENITIS

Wise [5] of Baltimore has noted two curious features in a small series of cases of the non-tuberculous form of abdominal lymphadenitis—namely, a seasonal incidence and uniform recovery after appendicectomy. The latter is particularly remarkable because the appendices he removed showed no obvious pathological changes. In the discussion on Wise's paper I. M. Gage of New Orleans said he had found enlargement of the mesenteric lymph-nodes in nearly two-thirds of his cases of chronic appendicitis, and he urged that the appendix should be removed in all cases with symptoms suggesting either chronic appendicitis or mesenteric lymphadenitis.

Until comparatively recently children showing these enlarged lymph-nodes were strongly suspected of being tuberculous and treated accordingly, but though it is now clear that the majority are non-tuberculous little is known about the cause of the condition. White and Collins [6] suggest that it may represent an abortive form or stage of infantile paralysis, for the lymphadenopathy and abdominal symptoms in that disease may be somewhat similar. Wise found nothing to support this view, but he favours some virus or toxin as the cause. He has removed and studied nodes from several cases and found them sterile on culture and without typical histological changes, though in two adults the affected nodes showed calcification. Gage, on the other hand, obtained cultures of enterococcus in some of his cases.

Of Wise's nine cases all but one were admitted to hospital during the months of August and September—six in 1937 and two in 1938. In spite of a sharp look-out only one case was diagnosed in the interval, and this one was atypical, for the patient had been subject to various allergies and intermittent abdominal symptoms all his life. This seasonal incidence does not seem to have been previously noted, and without confirmation it is difficult to know whether it is significant. The condition is not confined to children, two of Wise's series being adults of 43 and 25 years. The onset is usually more subacute than acute, with abdominal discomfort mainly felt in the right lower quadrant of the abdomen, and sometimes nausea and vomiting. Tenderness is slight, with little or no muscle-guarding, and there is no uniformity in the white-cell count or in the type of pyrexia. Such a case is likely to be diagnosed as appendicitis, and it is a comfort for the surgeon who operates to know that if he finds only lymphadenitis removal of the appendix may still result in cure.

4. See *Lancet*, 1934, **2**, 881.
5. Wise, W. D., *Ann. Surg.* May, 1939, p. 827.
6. White, C. S., and Collins, J. L., *J. Amer. med. Ass.* 1936, **107**, 1023.

GOITRE IN TIPPERARY

WORKING with a grant from the Irish Medical Research Council, Dr. M. Naughten and Dr. J. C. Shee describe [1] a survey of the occurrence of goitre in the Galtee and Slievenamon areas of co. Tipperary where this disease has long been known to be endemic. The survey has consisted of measurements of thyroid enlargement in children of five age-groups between 4 and 14 years, 1000 children of each sex being included. The results are in accordance with those of previous studies of the kind in so far as the age-incidence of goitre is concerned. They show, however, the surprising fact that thyroid enlargement in this region is equally prevalent (total incidence about 65 per cent.) in boys and girls—an observation which conflicts with the accepted view that in goitrous regions the incidence of the disease is three or four times as high among girls as among boys. It may be presumed that this local endemic is the result of local environmental iodine deficiency; it would be interesting to know whether this supposition is supported by the results of iodine analyses of the soil, water and milk-supply of the district.

THE WATCH BELOW

ON July 1 will come into force an agreement reached by a joint committee set up by the Shipping Federation, the National Union of Seamen, and the mercantile officers' societies, and adopted by the National Maritime Board. It consists of regulations and recommendations, of which the former for the first time compel owners of foreign-going ships to supply clean bedding, besides bunks, to a crew joining a ship. The men, on their side, accept the responsibility of keeping bunks and bedding clean and agree to the imposition of penalties for breaches of this regulation. The recommendations include the advice that the sleeping-quarters should be tidied daily in the men's own time and cleaned once a week, and the mess-rooms and lavatories cleaned daily in working-hours as part of the ship's routine; that the crew's quarters should be inspected daily by the master or his deputy and the result recorded weekly in the ship's log and daily in the owner's. Any sign of vermin should be instantly reported, and insecticides and disinfectants should be supplied. It is also recommended that in harbour the dynamo should not be stopped if it is needed for lighting or ventilating the mess-decks, and that every encouragement should be given to the men to look on their quarters as a "home from home." These regulations and recommendations apply to old ships as well as new.

The story of the very slow and very gradual improvement of the merchant seaman's lot on board British ships was outlined in our columns [2] when the Board of Trade instructions were last revised. It was then provided that in new ships the crew's quarters should be constructed amidships or aft

1. *Irish J. med. Sci.* April, 1939, p. 164.
2. *Lancet*, 1937, **2**, 809.

instead of before the mast, and that the different watches should have separate sleeping-quarters. Regulations were also made to ensure better lighting and ventilation.

RUSSIAN BIRTH-RATES

THE completed figures of the census taken on Jan. 17, 1939, include the entire population of the Soviet Union except of the far north, where a census will be taken later this year. The population was 170,467,186 (81,664,981 males and 88,802,205 females), which represents an increase in twelve years of 23,439,271, or 15·9 per cent. During the same period the population of all other countries in Europe is estimated to have risen by 32 million, or 8·7 per cent. The urban population of the U.S.S.R. has increased by 112 per cent. in these twelve years, being now 32·8 per cent. of the total. The average annual increase of population in the U.S.S.R. has been 1·23 per cent., and recent birth-rates in various large cities are compared as follows:—

	Total births	Average births per 1000 population
Moscow (1938) ..	117,200 ..	28·5
Leningrad (1938) ..	83,800 ..	27·4
Kiev (1938) ..	22,500 ..	27·4
Kharkov (1938) ..	22,400 ..	27·7
Baku (1938)	26,900 ..	33·9
Berlin (1936).. ..	59,500 ..	14·1
London (1936) ..	56,300 ..	13·6
Paris (1936)	32,500 ..	11·5
New York (1936) ..	99,400 ..	13·5

The population of Moscow has increased from 2,029,425 in 1926 to 4,137,018 in 1939 (103·9 per cent.) and that of Leningrad from 1,690,065 in 1926 to 3,191,304 in 1939 (88·8 per cent.).

ELIZABETH GARRETT ANDERSON

LIVES of great women oft remind us that footprints left in the sands of time are partly dug in by the biographer, or at any rate receive definition from his hand. The choice of a biographer is therefore important. No woman, and so far only one man, has inspired a biographer to make a life study of his subject, but in the last few years two women at least have been heroines to their daughters—Marie Curie and Elizabeth Garrett Anderson. It is impossible to read the second of these two biographies without thinking of the first, not because they are alike, but because they are so predictably different in subject and treatment. In the exceptional mind of Marie Curie the mathematician worked with the theorist, a leaping imagination was governed by a passion for fact. Her daughter told her story with the same vigour of imagination and the same devoted accuracy, and the book is filled with moving enthusiasm. Elizabeth Garrett Anderson was a great woman of a totally different stamp, a practical politician whose foremost interest was not science but the determination to free women to study science, or anything else they chose. She was a first-class doctor because it was her business as a pioneer to be good at her job; she was an excellent committee woman because the liberation of women had to be achieved through the tedium of committee work. Her story is told with order, quiet humour and restraint by a daughter who has followed her in the profession which she helped to open to women. Dr. Louisa Garrett Anderson's book[1] reads like an extremely interesting report, illustrated with quotations from letters and speeches. The early chapters are narrative but later when it is convenient to isolate a series of events they are put in a separate chapter which may cover a period of many years. This treatment helps to disentangle the complex warfare waged by Elizabeth Garrett Anderson in the course of her long life; and has the effect of snapshotting her on her various battlefields. One impressive little picture of the kind shows her appealing to the British Medical Association to admit women. Her speech was a masterpiece of calm and honourable argument, without one petty plea in it. It was characteristic of the prejudice against which she strove that "one member after another rose and protested that they were charmed and any action they might take would be entirely on the principles involved"; the meeting then voted against her. In Central Europe today women are being forced back into the position from which Elizabeth Garrett Anderson and her contemporaries extricated English women less than fifty years ago. This book shows by what labour and patience their status will have to be won back.

1. Elizabeth Garrett Anderson. By Louisa Garrett Anderson. London: Faber and Faber. 1939. Pp. 338. 10s. 6d.

INOCULATION AGAINST TUBERCULOSIS

SATISFIED that experiments on rabbits have shown that protection against human tuberculosis can be produced by inoculation with heat-killed tubercle bacilli, Opie, Flahiff, and Smith[1] have sought to measure its value to man. Their field of study was the Mental Hospital of Kingston, Jamaica (where the great majority of patients are negroes), to which in 1932–38 were admitted 416 patients who did not react to tuberculin. Taking alternate admissions, half of these were inoculated with heat-killed bacilli, and half were left as controls. Both these groups were then given an X-ray examination of the chest within a month of admission, which was repeated, together with tuberculin tests, at intervals of three to four months during their stay in the institution. Persons admitted to the hospital are, it seems evident, freely exposed to tuberculous infection, for rather more than a third of the control group had acquired a tuberculin reaction within three months of admission, and more than half by the end of a year. This exposure may reduce the advantage of the inoculation, if any, for the patients must be at some risk during the period of immunisation and before they have acquired any protection. The results, however, suggest an advantage to the inoculated, for among the 210 inoculated persons there were 23 cases of pulmonary tuberculosis and 16 deaths, whereas among the 206 uninoculated there were 39 cases and 27 deaths. The comparison is not quite straightforward because the patients were passing at different times out of the hospital by discharge and thus continually reducing the numbers exposed to risk, the control group being the more rapidly depleted. The investigators apply a rather rough measure of exposure to risk within each six-month interval after admission and find by such means lower attack-rates at each stage among the inoculated. The fatality-rate, 69 per cent., was, it may be calculated from the figures above, identical in the two groups; so inoculation had no effect upon the severity of the illness in those who acquired it. Opie and his colleagues conclude that under the conditions present in the hospital the protection conferred was greatest during the first eighteen months of residence. This observation is in keeping with the fact that a large proportion of the

1. Opie, E. L., Flahiff, E. W., and Smith, H. H., *Amer. J. Hyg.* (Sect. B), May, 1939, p. 155.

uninoculated patients had by that time become themselves protected by spontaneous infection, as shown by the tuberculin test; but the figures given in support hardly bear out the contention. They seem to suggest rather that the attack and death-rates of the inoculated were equally favourable vis-à-vis the uninoculated at all stages of observation, and thus that the intracutaneous administration of heat-killed tubercle bacilli was of consistent benefit. That is obviously a highly important observation and the data seem to deserve rather closer statistical analysis.

UNRESTRICTED SALE OF PATENT MEDICINES

IN commenting on the Budget in our issue of April 29 we pointed out that the proposed abolition of stamp-duties will mean that patent medicines are henceforth marketed at every kind of store, and we described this discontinuation of licensing as socially and medically a retrograde step. Attention is now being paid more widely to the possibility of harm from the Chancellor's unnecessary concession to producers of such medicines, and it is stated (p. 1412) that the protests are receiving official consideration. That the intended change is of substantial significance to those concerned is evident from the speech made by Mr. Philip Hill, chairman of Beechams Pills Ltd., at the annual meeting of that company on June 8, when he announced a profit of £723,663 on the year's working. After describing the repeal of medicine duties as "probably the most important event which has ever happened in the history of the proprietary medicine and proprietary article business," he declared that it opened up great possibilities. A much wider field of distribution would be available, and the company had already been approached by some of the largest potential distributors in the country, who had previously been prevented from dealing with this type of merchandise. "We hope," he added, "that the repeal of the medicine duties will enable us to provide the public with our products in a smaller and cheaper form than has hitherto been possible." Mr. Hill at the same time expressed himself in favour of "reasonable control of the formulæ and advertising of proprietary medicines"; but if the Chancellor's proposal is realised the increased distribution of patent medicines will antedate, by an indefinite period, any measures that may be taken to safeguard the public from the damage that some of them do. Meanwhile that damage will be done on a larger scale than ever.

LIBERTY AND LICENCE

THE voluntary-hospital principle has had a good press during the past week, the occasion for comment being the annual meeting of King Edward's Hospital Fund for London and the appearance for the ninth year in succession of the Hospitals Year-book compiled by the Central Bureau of Hospital Information.[1] The *Times* believes that the hospital system of this country is evolving slowly but surely along lines which correspond with the wishes and instincts of the public. It remarks that any reformer in this field finds himself face to face with two rigidities—namely, the confidence felt universally in the voluntary principle, and the wish to preserve in the case of each institution not only a tradition but also a place—and it speaks of the crowning achievement of the King's Fund in having been able to effect coördination without doing violence to individuality. The Year-book contains two essays on these themes. One of these deals with the areas of hospital administration. A process of regionalisation is being worked out on a map of England and Wales, dividing it into fourteen areas "within each of which," in Mr. R. H. P. Orde's words, "there shall be as complete a hospital service as to justify the belief that no inhabitant of it need go outside its boundaries (except at his own desire) to find treatment for sickness or accident up to standard recognised as within the competence of a modern general practitioner and a modern qualified consultant." There should, he suggests, be no part of any such division which from a treatment point of view could be regarded as a "distressed" area. In many of the proposed divisions there are natural groups of hospitals, voluntary and municipal, which already coöperate. It is the task of the provisional council now engaged in implementing the Sankey Commission's recommendations to further the process of crystallisation and bring to light other interests and the advantage of combined action. An obvious step would be a bed-register for each division on the lines of the emergency bed service now working smoothly in London. Every division should provide adequate specialist services but not at more hospitals than local conditions demand. It is, as Mr. Orde says, a task which cannot be hurried—although time must not be wasted. The other essay reveals one unfortunate example of unbridled individuality. The value of the Year-book depends on the compilation of figures from all the voluntary hospitals in the country; these figures are as vital to any combined action as are the local registrar's returns to any system of public health. Without them no valid conclusions can be drawn. And yet there are hospitals which, year by year, fail to supply these figures either in the approved form or within a reasonable period. This year 8 per cent. of the hospitals have failed to supply the figures at all, and the sloth of others has delayed the date of publication for seventeen months from the conclusion of the period to which the figures refer. Persuasion has been unavailing, but it should not be beyond the wit of the Hospitals Bureau to devise some method by which the right stimulus should be given to the recalcitrant hospital committees. For after all they are only being asked to play the game, and no voluntary hospital association in this country could be impervious to that appeal.

1. From the bureau, 12, Grosvenor Crescent, S.W.1.

ANTIHORMONES

SINCE Collip and Anderson[1] demonstrated antithyrotrophic activity in the serum from animals injected repeatedly with thyrotrophic preparations, antihormones to the ketogenic, lactogenic, and gonadotrophic hormones of the anterior pituitary and to the gonadotrophic hormones present in pregnant-mare serum and human-pregnancy urine have been widely investigated. So far none of these hormones has been obtained in a chemically pure form, though the evidence points to their being proteins. This has inevitably led to the belief that the antihormones were antibodies in the immunological sense, for animals develop antihormones only to hormones prepared from some other species.[2] It has been difficult, however, to understand this antigenic property of the hormones, for they act on all species in the same fashion and must therefore be presumed to have the same composition in all species. The situation is now becoming clearer. Twombly[3] found that gonadotrophic substances

1. Collip, J. B., and Anderson, E. M., *Lancet*, 1934, **1**, 76.
2. Katzman, P. A., Wade, N. J., and Doisy, E. A., *Proc. Soc. exp. Biol., N.Y.* 1938, **38**, 122.
3. Twombly, G. H., *Endocrinology*, 1936, **20**, 311.

inactivated by heat or ageing retained their antigenic properties and similar observations have been recorded by Brandt and Goldhammer.[4] Dealing with the thyrotrophic hormone, Werner[5] has shown that of two preparations prepared by different chemical procedures from the same glands, yet having equal activity, one may have no antigenic power at all, and Rowlands and Young[6] now report that the capacity of thyrotrophic preparations to produce antisera is independent of their purity. The purer preparation in their experiments, given in equivalent dosage to a less pure sample, produced much less antibody. They even found that a preparation of prolactin with no demonstrable thyrotrophic activity also stimulates production of antithyrotrophic serum. The antigenic capacity is therefore not vested in the activity of the hormone.

Rowlands and Young offer a suggestive hypothesis to explain why the antibody acts against the active hormone though the hormone that gave rise to its production is not active. Other workers have shown that immunisation with chemically similar substances diminishes the specificity of the antibodies formed, so that cross-reactions may occur. It is suggested that the power of inactivated hormones to produce antibodies to active hormones is due to some such mechanism. The inactivation may alter the chemical structure very slightly but not enough to alter its antigenic properties. The sample of prolactin which Rowlands and Young used might be presumed to contain some inactivated thyrotrophic hormone. If this is so, it may be that the species specificity of many of the antisera demonstrated by Rowlands[7] may be due to species differences in the inactive residue of the hormone, the active part of which is presumed to be some sort of prosthetic group attached to this larger molecule. Actually such a conception approaches that of Collip,[8] who suggested that all the anterior-pituitary hormones might be regarded as prosthetic groups to two or three large parent molecules.

BLOOD FOR THE SERVICES

THE value of blood-transfusion for casualties in the fighting forces was recognised during the late war, and the recent Spanish conflict brought into being several methods for the use of stored blood which met with considerable success. It has therefore been decided to set up an Army blood-transfusion service to provide quantities of stored blood to assist in the treatment of wounded men in any of the fighting services. Because of the extensive scale on which the service is to be created it has been found necessary to establish blood depôts in this country, where civilian volunteers can be bled under proper conditions and the blood transhipped to the places where it is required. For various reasons an area in the West of England has been chosen in which central blood depôts are being set up with a number of sub-depôts or blood-collecting centres in the smaller towns of this region. By means of refrigerator motor-vans blood collected at the sub-depôts will be transported to the main depôts for packing. Each of the main depôts is near an aerodrome, from which it will be possible to send blood by aeroplane to the fighting zones or where military casualties are being treated. The service is being arranged in such a way that it will be responsible for civilian needs in the area where it is operating, thus preventing duplication, but will only supplement the civilian depôts which have been established elsewhere under exceptional circumstances.

After collection in special pint bottles, the citrated blood will be cooled rapidly to 4° C., at which temperature it can be stored for some weeks. The organisation of the main depôts and sub-depôts has been made possible by the coöperation of the voluntary and municipal health services in the area. Thanks to the enthusiasm with which the scheme has been received and the method of organisation adopted, the nucleus of universal donors which it is aimed at securing will be completed within the course of the next few weeks. The service is capable of expansion, so as to deal with 100,000 potential donors, from which the group O population will be selected.

4. Brandt, R., and Goldhammer, H., *Klin. Wschr.* 1938, **17**, 236.
5. Werner, S. C., *Endocrinology*, 1938, **22**, 291.
6. Rowlands, I. W., and Young, F. G., *J. Physiol.* 1939, **95**, 410.
7. Rowlands, *Proc. Roy. Soc.* B, 1938, **124**, 503.
8. Collip, see *Lancet*, 1938, **1**, 1469.

THE BIRTHDAY HONOURS

IT is a pleasant duty to congratulate the members of our profession whose names appear on p. 1398. Whatever may happen in other walks of life, honours are seldom bestowed on medical men and women without good reason, and the present list recognises high distinction as well as devoted effort. Dr. Robert Hutchison graduates from one kind of aristocracy to another; Sir John Weir is promoted for his long attendance on the King; the heads of the three services become knights in orders of chivalry; and knighthoods are conferred on three medical men whose fine work is familiar to nearly all of us—Dr. Briercliffe, Prof. Kelly, and Dr. Drummond Shiels—and on one who has strayed a little from the fold, Dr. Butler. These represent only the beginning of what we may respectfully call a sound sample of medical endeavour and achievement. Outside the profession itself we are glad to note the knighthood for Mr. George Morton, K.C., chairman of the Board of Control for Scotland, and the similar honour to one of THE LANCET'S contributors, who must remain, as always in these columns, anonymous though invaluable. In the world of hospitals Mr. Bernard Docker, the indefatigable chairman of the Westminster Hospital, becomes K.B.E., and Mr. Harry Oakes, the generous benefactor of St George's, a baronet.

Sir FRANCIS ACLAND'S death has followed with tragic suddenness his farewell address to the Dental Board. Ample testimony has been received to the value of his work as Crown member of the senate of London University and as chairman of council of the London School of Medicine for Women. He leaves behind him the memory of a firm and gracious administrator.

". . . those men of good will who are acquainted with scientific aims and achievements have their own peculiar distress because they know how little is done for the general good, compared to what could be done. Exposition, therefore, becomes one of our chief concerns. It must be mated necessarily with the understanding that appropriate education can provide. We desire that all men and especially men of good will, and especially also men of good education who are the natural leaders should be aware of what science is doing and can do. . . . Scientists are so preoccupied with their business of research, naturally so, and in their researches have gone so far that the world has no clear knowledge of the positions that have been reached. We have to see to the coupling and take the world with us."—Sir WILLIAM BRAGG, F.R.S., *Science*, May 19, 1939, p. 452.

SPECIAL ARTICLES

FEAR*

BY E. MIRA, M.D. Madrid
FORMERLY PROFESSOR OF PSYCHIATRY IN THE UNIVERSITY OF BARCELONA

IT is a property of living matter to be excited by adequate stimuli and to be inactivated by overwhelmingly unfavourable external conditions. The inactivation may be definitive (death) or merely temporary. Animals with a nervous system show it in a general inhibitory process that is known in its most simple form as an "immobility" or "death" reflex, already observed in asteroidea such as the starfish and described in higher forms of animals by Pavlov. According to Pavlov the fear emotion is nothing but the conscious aspect of this process: "At the basis of normal fear and in particular of pathological fears there lies a predominance of the physiological process of inhibition." (Lectures on Conditioned Reflexes, New York, 1932, p. 368.)

During the late Spanish war we found that the fear emotion—when experienced without any other mixed emotional state—arouses in the individual a feeling of lessening of the Ego, of reduction of his reacting power and of inhibition, and contraction of the Self. In its more violent form, fear makes a person terrified—i.e., converted into *terra* (earth). A terrified subject feels himself as inanimate and motionless as a stone (petrified). But starting from these forms we come to others in which the inhibition is not so general and may even be followed, at certain levels, by a process of excitation. For the evolution of the fear emotion I offer the following scheme:—

Uncontrolled fear			Controlled fear	
TERROR	PANIC	ANXIETY	ALARM	CAUTION
General inhibition	"Cortex" inhibition with secondary excitation of mid-brain	Mixed state: conflicting inhibition and excitation at different levels	Concentration and feelings of "insecurity" and "mistrust"	Reserve and restraint; hypocrisy; dissimulation
Loss of movements and stopping of mental activity with eventual loss of consciousness	Aimless, automatic movements, occasionally of enormous strength (blending with anger or rage)	Restricted Jumping Contradictory movements	Slow, repeated and superfluous movements, sometimes with slight signs of hesitation	SUBLIMATION OF FEAR Prudence; modesty; meticulosity; concern

As a general result of my observations I believe that different disturbances can be detected which correspond closely to each of the forms of uncontrolled fear, as follows:—

TERROR	PANIC	ANXIETY	SEQUENCES OF ALL MAY BE
Stupor	Twilight states	Hypochondriac states	*Conversion symptoms*, especially paretic ones
Catatonic states	Impulsive fugues and confused agitation	Obsessional (phobic) symptoms	*Neurasthenic symptoms* (exhaustion and increased fatigability, headache, &c.)
		Hysterical fits	*Slight retardation*

Conditions that favour such disturbances are: physical inferiority, whether due to constitutional weakness or chronic toxic and infectious states; temporary exhaustion from lack of food, sleep, or rest; lack of personal incentives and low "moral tension"; and, last but not least, lack of a definite plan of action. Thus, in order to avoid the effects of fear among soldiers the means employed were: proper medical selection of recruits; careful attention to basic needs, such as food, clothing, and sleep; a scientifically directed effort to keep up individual morale by all available methods (physical training and sports, lectures to explain the meaning of the war); and careful and continuous supply of information about *what to do* in all possible situations related to the war.

The general methods of treatment adopted may be summarised thus:—

(*a*) *Stuporose and catatonic conditions.*—Bed, hot baths followed by massage. Injections of pituitary extracts and cortin. (Injections of cocaine, sodium nucleinate, strychnine and other "exciting" substances should be avoided because they may stir up a state of furious excitement and aggression.)

(*b*) *Tremors, tics and non-epileptic fits.*—Bed, supervised isolation and, according to the results, hypnosis, prolonged narcosis or physical re-education. For hysterical fits in which a selfish purpose (escaping from the military situation) could be detected, compressio testis during the fits.

(*c*) *Paralysis and paresis.*—Electrotherapy combined with suggestion and active mobilisation of the paretic part. If necessary, hypnosis.

(*d*) *Depression and retardation.*—Tonic injections, minor hydro- and mechano-therapeutic measures; rest in the open air; arousal of personal incentives; gradually increasing physical exercise.

(*e*) *Twilight states and severe forms of anxiety.*—Prolonged narcosis by means of injections of phenobarbitone, hyoscine hydrobromide and, if necessary, injections of insulin and digitalin (in order to prevent or to cure vomiting and failing circulation).

Broadly speaking the Spaniards adapted themselves very quickly to war conditions, and there were fewer cases of war neurosis and of fear reactions than might have been expected.

* Summary of a lecture delivered at the psychological laboratory of the University of Cambridge on May 22.

MEDICINE AND THE LAW

Medical Certificate by Unregistered Practitioner

THE Medical Act, as is well known, declares that if a statute requires a certificate to be given by a physician, surgeon or other medical practitioner, the certificate will not be valid unless the person signing is registered under the Medical Act. Although there may not always be a statutory requirement in a particular instance, an unregistered practitioner often finds himself in an awkward position when asked to give a medical certificate. He will be expected to indicate his qualifications and this fact may bring him within the Medical Act by inducing the simulation of a title or description which he does not possess. Last week the magistrate at Westminster police-court had before him a summons against Arthur Fred Day of Lower Belgrave Street for using the title of doctor of medicine contrary to the Medical Act, and falsely using the description of medical examiner, thereby implying that he was registered under the act. The proceedings, taken at the instance of the Medical Defence Union, arose from an application for the grant of a pilot's licence for the Civil Air Guard. The Air Ministry's form of application provided for a medical certificate. Mr. Day signed the applicant's form and appended his name as

medical examiner. He put the letters M.D. to indicate his qualifications, adding what the prosecution described as "some peculiar hieroglyphic." There was no doubt that the defendant was not, and never had been, on the Medical Register. For the defence it was claimed that he had gone out of his way to indicate that he was not a registered medical practitioner by putting in brackets the letter "J" after the letters M.D. Mr. Day explained that "J" stood for Jefferson College, Chicago; he had no intention to represent himself falsely; he had thought that his examination of the applicant for the pilot's licence was merely preliminary. The magistrate imposed a fine of 20s. with £10 10s. cost.

SWEDEN

(FROM AN OCCASIONAL CORRESPONDENT)

THE TREATMENT OF PNEUMONIA

THOUGH recent advances in the treatment of pneumonia may greatly improve the prognosis, they have by no means simplified the task of the doctor called on to choose between serotherapy, chemotherapy, neither, or both. At a meeting of the Swedish Medical Society last September the complexity of the problem was emphasised, and various solutions were discussed. Now Prof. Hilding Berglund, of Stockholm, has issued a memorandum on the diagnosis and treatment of pneumonia as adopted at the St. Erik Hospital. This memorandum is not intended to stereotype treatment but to encourage uniformity of procedure, so that really comparable data may shortly be forthcoming from many different hospitals. The pneumonia patient admitted to Prof. Berglund's hospital is promptly subjected to a variety of tests, which include sputum examinations, blood-cultures, type determinations, and radiography. The choice between horse or rabbit serum and M. & B. 693 is made as follows. In all early cases in which definite typing is possible by Neufeld's method, serum, if it is available, is given; if not, M. & B. 693 is given. When there is no available sputum, or the Neufeld method does not immediately assure a type diagnosis, and the patient's condition is satisfactory, treatment is deferred twelve hours or more while the typing tests are continued. If, however, the general condition is unsatisfactory, or if the blood-pressure cannot be maintained above 110 mm. Hg with such remedies as ephedrine, M. & B. 693 is given. The nauseating effect of this drug can be counteracted by chloretone suppositories. In fulminating type III pneumonia very large doses of serum (up to 700,000 units) are to be preferred to M. & B. 693. In general, M. & B. 693 medication should never be started before a bacteriological examination of the sputum and a blood-culture have been made.

THE NOTIFICATION OF TUBERCULOSIS

There is a proposal before the Swedish parliament for revision of the law of 1914 with regard to measures for the prevention of spread of tuberculosis. Hitherto the public-health authorities have had to dispense with legislative measures giving them a free hand in the matter of notification. This is incumbent on doctors only when they find that persons with pulmonary tuberculosis are living under conditions calculated to cause grave risks of infection for those who come in contact with them. The new proposals aim at making the notification of all cases of tuberculosis compulsory. It is also proposed that, when patients with infectious tuberculosis are discharged from hospital or sanatorium, notice of such discharge shall be sent to the tuberculosis dispensary in the area to which the patient returns. Dispensary doctors will have to keep a register of notifications, and patients known to be infectious will be forbidden to accept employment in dairies or as nursemaids. If these proposals become law, the public-health machinery in Sweden, so far as tuberculosis is concerned, will correspond more closely to that in Norway than hitherto.

VACCINATION AGAINST SMALLPOX

It is proposed that the vaccination of children during the first two years of life shall be encouraged, and that, when children reach the school age without having been vaccinated, the school medical officer shall vaccinate them, unless their parents or guardians have formally protested. At least fourteen days before the date of the intended vaccination notice thereof shall be read in church, published in the local press, and communicated in writing to the child's custodian.

SICKNESS INSURANCE

With a population of only six million odd, Sweden had at the end of 1938 as many as 1,251,627 persons insured against sickness in approved societies. In 1938 alone 130,000 new members joined the societies.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

METABOLISM OF THE HEART

THE third Sharpey Schafer memorial lecture was given in Edinburgh last week by Prof. C. A. Lovatt Evans, F.R.S., of University College, London. He began by describing the enormous amount of work which the human heart performs during its life—i.e., sufficient to lift 10 kg. through ten miles—a feat of endurance which is almost unequalled, for the heart weighs only some 300 g. The heart, however, is outstripped by the muscle of the insect's wing in quickness of contraction and speed of recovery. Short films illustrated the operation of the heart-lung preparation and showed the increase in output which results from increasing the inflow, and the rise in work performed when the arterial resistance is raised. The lecturer described the external and the internal methods of measuring the heart's consumption of oxygen. By both methods it has been shown that the efficiency of the heart probably never exceeds 30 per cent. and under normal conditions is usually between 5 and 10 per cent.

In the denervated preparation increase in the work done is accompanied by increase in consumption of oxygen and in efficiency, but the increased work induced by increasing the inflow is associated with a greater rise in efficiency than that following increase in arterial pressure. In this preparation these manipulations are not complicated by any change in heart-rate. In the heart-lung preparation, however, in which the nerve-supply is maintained, increase in arterial pressure lowers the heart-rate, whereas increase in output raises the rate. Gollwitzer-Meier has shown that vagal slowing is followed by a greater degree of reduction in the consumption of oxygen than can be accounted for by the fall in heart-rate alone. Similarly adrenaline increases metabolism apart from the rise in rate which it may induce. In the innervated heart, indeed, increase in work done is often effected without

any increase in consumption of oxygen and therefore with greater economy and efficiency.

All isolated hearts eventually fail, and the failure can be shown to be due to inability of the heart to cope with the work demanded of it. Such failure is associated with rising pressure in the auricles and with dilatation of all chambers. Running parallel with the dilatation there is increased consumption of oxygen and diminished efficiency. If the work asked of the failing heart be reduced, the degree of dilatation and the consumption of oxygen are lessened, and the heart becomes more able to carry out its task. If, on the other hand, the load be increased, increased work may be obtained but only at the expense of further dilatation, greater consumption of oxygen, and further lowering of efficiency. Indeed the current view is that cardiac insufficiency means reduced mechanical efficiency, with a smaller fraction of the energy consumed being converted into work.

Katz and other workers have, however, suggested that in the failing heart there may be a diminished chemical change rather than a lessened output of work, and that the efficiency may not be reduced. This work was done with the internal method of measuring the metabolism, the coronary-sinus fraction of the coronary blood flow being analysed. Fisher has shown that, if both the coronary sinus and the right ventricular (thebesian vein) fractions be collected and analysed, a rising consumption of oxygen and a falling efficiency can be demonstrated when the heart fails.

The addition of digitalis to the perfusing blood of the failing heart diminishes the diastolic volume and the consumption of oxygen and increases the efficiency. The administration of adrenaline to the denervated heart may increase the work done but at greater expense and lowered efficiency, and long-continued adrenaline eventually produces failure and death. Gollwitzer-Meier, however, has shown that on the heart in situ adrenaline acts by different mechanisms. Direct stimulation causes increased rate and consumption of oxygen. Nervous control of the rate by increasing the vagal tone reduces the increased metabolism, while the central effect also increases vagal tone and lessens metabolism. The total result, according to him, is a reduction in consumption of oxygen and in rate and an increase in work done and in coronary flow, along with improved utilisation of oxygen.

Prof. Lovatt Evans concluded his lecture with a film illustrating the technique developed by him for the study of the living heart with an artificial aeration chamber instead of the lungs. With this preparation it is possible to measure the metabolism of the heart without the complication of the lung metabolism.

IRELAND

(FROM OUR OWN CORRESPONDENTS)

A CENTENARY CELEBRATION

THE annual meeting of the Irish Free State Medical Union, held last week in Dublin, was made the occasion of a celebration of the centenary of the foundation of the Irish Medical Association, one of the constituent bodies which joined to form the present Union at the beginning of 1936. The usual programme of the annual meeting, which consists of a scientific session, a business meeting, and a dinner, was extended this year to include a commemorative session, a golf competition, and a medical trades exhibition. The meeting was given much publicity in the Irish newspapers, and the *Irish Press* issued a special supplement of 24 pages, including articles on the public aspects of medicine.

At the commemorative session on June 8 an address on the history of medical organisation in Ireland from 1839 to 1939 was given by Prof. Robert J. Rowlette and followed by a description of the position of the medical profession in ancient Ireland by Prof. T. P. C. Kirkpatrick, who showed a close parallelism between the principles of the ancient legal codes, in so far as they concerned the medical profession, and those of the Hippocratic oath. In many respects the practice of medicine was more efficiently controlled in Ireland at the beginning of the Christian era than at present. Prof. T. G. Moorhead spoke on the foundation and recent history of the Medical Union.

The business meeting dealt with many items in a short time, owing largely to the capacity of the president, Dr. Patrick MacCarvill, as chairman. He was elected to a further year of office. He recounted in detail the events which compelled the Union to "black-list" the army medical service of Ireland because of unsatisfactory pay and pensions. An account was also given of a recent conversation between representatives of the Union and the Minister for Local Government and Public Health concerning fees for immunisation against diphtheria, and the central council was authorised to continue discussions on the same lines.

The annual dinner, held on the same evening at the Shelbourne Hotel, was attended by over a hundred members and their guests. The heads of University College, Dublin, and of the two royal colleges were among the guests, as was also Dr. Leonard Kidd, who was president of the Irish Medical Association in 1903.

On June 9, at the scientific session, a discussion on the developments of modern chemotherapy was introduced by Prof. Henry Moore, who was followed by Prof. Moorhead, Prof. J. M. O'Donovan, Prof. E. N. MacDermott, and others.

A BELFAST HOSPITAL

The new extension of the Hospital for Diseases of the Nervous System, Paralysis, and Epilepsy, Belfast, was opened by the Duchess of Abercorn on May 24. The hospital was founded in 1897 and for the past forty-three years has carried on its work in a large double-fronted house in Claremont Street. About a dozen years ago a convalescent home was established at Killowen, a large house surrounded by open grounds and gardens in the country near Lisburn, co. Antrim. The old building in Claremont Street was not, of course, designed to meet the needs of a modern hospital, and the board felt that it would be difficult, if not impossible, to alter it sufficiently to cope with the requirements of today. The opening of the new hospital, which adjoins the old, completes the first stage of their plans. The intention is, when sufficient funds are available, to knock down the old building and to substitute modern premises, which will then complete the new hospital.

The building just opened is designed on modern lines and has two floors. On the ground floor is the outpatient department, facing Abercorn Street. There is a large reception room for patients, and the dispensary and physiotherapeutic department lead off it. The examination-room for outpatients is well lighted and affords accommodation for students. Dressing-rooms for patients adjoin it. On a separate corridor rooms have been appointed for the establishment later of an operating-theatre and radiographic apparatus, and there is a small clinical laboratory with a mortuary

attached. On the second floor two main wards, one for either sex, each accommodating eight patients, are connected with a broad sun-balcony, which overlooks the hospital garden, and on to which the beds may be wheeled in fine weather. Off the corridor between the wards are two single rooms and one two-bed room for paying patients and a large day-room for patients able to be out of bed.

The new building was designed by Mr. R. Frater, A.R.I.B.A., chartered architect, of Belfast, in conjunction with the honorary visiting staff. The cost has been £13,000, including equipment, and of this £8000 has already been subscribed. The walls, built of rustic brick, are finished in white plaster on the inside. The floors of the wards and outpatient-room are made of wood blocks, and cork-tiling is used in the corridors to deaden sound.

The additional accommodation (the hospital can now take some 30 inpatients) will be a valuable extension of the hospital services of Belfast and an improvement in the teaching facilities already available for students of nervous diseases.

BIRTHDAY HONOURS

THE honours list issued on June 8 contains the names of the following members of the medical profession :—

Baronet

Robert Hutchison, M.D., D.Sc., LL.D.
President of the Royal College of Physicians; consulting physician to the London Hospital.

G.C.V.O.

Sir John Weir, K.C.V.O., M.B.
Physician to H.M. the King; senior physician to the London Homœopathic Hospital.

K.C.B.

Lieut.-General William Porter MacArthur, C.B.E., D.S.O., O.B.E., F.R.C.P., K.H.P.
Director-general of Army Medical Services.

Surgeon Vice-Admiral Percival Thomas Nicholls, C.B., M.R.C.S., K.H.P.
Medical director-general of the Navy.

K.B.E.

Air Vice-Marshal Albert Victor John Richardson, C.B., O.B.E., M.B., K.H.S.
Director of medical services, Air Ministry.

Knights Bachelor

Rupert Briercliffe, C.M.G., O.B.E., M.D.
Director of medical services, Nigeria.

Edwin John Butler, C.M.G., C.I.E., M.B., F.R.S.
Secretary to the Agricultural Research Council.

Robert Ernest Kelly, C.B., F.R.C.S.
Professor of surgery in the University of Liverpool.

Thomas Drummond Shiels, M.C., M.B.
Medical secretary, British Social Hygiene Council.

C.B. (Military)

Major-General H. H. A. Emerson, D.S.O., M.B.
Late director of hygiene, the War Office.

Major-General I. M. Macrae, C.I.E., O.B.E., M.B., K.H.P.
D.D.M.S., Eastern Command, India.

C.M.G.

Ralph Roylance Scott, M.C., M.B.
Director of medical services, Tanganyika Territory.

Christopher James Wilson, M.C., M.D.
Of Naivasha, Kenya Colony.

C.I.E.

Lieut.-Colonel F. J. Anderson, M.C., F.R.C.S., I.M.S.
Professor of surgery, Medical College, Calcutta.

Lieut.-Colonel R. F. D. MacGregor, M.C., M.B., I.M.S.
Residency surgeon, Hyderabad, Deccan.

C.B.E. (Military)

Colonel E. M. Cowell, D.S.O., T.D., F.R.C.S.
A.D.M.S., 44th Division, T.A.

Surgeon Captain Leonard Darby, M.B.
Senior naval medical officer, Sydney.

Colonel Roger Errington, M.C., T.D., M.D.
A.D.M.S., 50th Division, T.A.

Brevet Colonel Alexander Hood, M.D.
Deputy director of medical services, British Forces in Palestine and Trans-Jordan.

C.B.E. (Civil)

Arthur Marcellus De Silva, F.R.C.S.
Senior surgeon, General Hospital, Colombo.

O.B.E. (Civil)

Major Bijeta Chaudhuri, F.R.C.S., I.M.S.
Senior medical officer, Port Blair.

Kenneth Hutchinson Digby, F.R.C.S.
Professor of surgery, University of Hong-Kong.

George Alexander Clarence Douglas, M.S.
Orthopædic surgeon to Brisbane Hospital, Australia.

Hugh Arrowsmith Grierson, M.C., M.B.
Senior medical officer, H.M. Prison, Brixton.

Alexander Sydney Joske, M.D.
President of the medical board, Victoria.

Henry Richard Rishworth, F.R.C.S.
P.M.O., Great Indian Peninsula Railway.

Reginald Hunt Tootill, M.B.
Of Urmston, near Manchester.

Donald Percy Wailling, M.R.C.S.
Commissioner and med. officer, British Virgin Islands.

Ernest Watt, M.D., D.Sc., D.P.H.
Medical officer, Department of Health for Scotland.

Montague Harold Way, M.R.C.S., J.P.
Med. officer, St. John Ambulance Assn., Portsmouth.

M.B.E. (Military)

Lieutenant E. A. Cotton, D.C.M., I.M.D.

Major Donald Ross, T.D., M.B., J.P.
Med. supt., Argyll and Bute Dist. Mental Hospital.

Captain Walter Stewart, M.B., R.A.M.C.

M.B.E. (Civil)

Rai Bahadur Rabindra Nath Banerji, M.B.
Medical practitioner, Allahabad.

Alan Leslie Greenway, M.R.C.S., I.M.D.
Medical officer, Kuwait, Persian Gulf.

Radha Krishna, M.B., D.P.H.
Med. supt., Silver Jubilee Tuberculosis Hosp., Delhi.

Una Frances Marie Morton, M.D.
Principal, Women's Medical School, Agra.

Kaisar-I-Hind Medal

Grace Stapleton, M.D., F.R.C.O.G.
Professor of obstetrics and gynæcology, Lady Hardinge Medical College, Delhi.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index

FROM PETER QUINCE

III

Now for a change let us put ourselves under the microscope.

The whole business has turned out very differently from what we expected: and it is only reasonable to try to remember why on earth we ever became doctors? Personally I can recall three attractions: (*a*) the moral certainty of owning a motor-car; (*b*) the urge to score off an elder brother who was in "business"; and (*c*) the vague desire to be a "useful" member of the community. Of course at that age one did not regard tradesmen, mechanics and other business folk as being Useful Members of Society. They existed to make money for their own pockets. A doctor was—well—different: he was inspired by the Highest Ideals and all that.

Now what about those deep unconscious urges which may or may not have activated our motives, and which our choice has undoubtedly satisfied to a greater or less extent? Supposing, for the moment, we play the Psychology Game. Disregarding the possibility that we may love our fellow men, or that the behaviour of living organisms may be of absorbing interest to us, let us assess all our Lowest Possible Motives and face them with a happy smile. Applying first to the Freudian school—the Senior Service—we are content to believe that it didn't get much of a look-in. Any half-acknowledged tendency to voyeurism in premedical days was satisfied—and shall we say sublimated?—long before one reached the Conjoint exam. Not entirely perhaps. No matter how familiar we may be with the female extremities, most of us like to have a look to make sure. Hence our steady attendance at those refresher courses in anatomy organised by Mr. C. B. Cochran.

Adler—or Jung—comes next? I forget. The Will to Power and the desire for Affection are both offered easy fulfilment by the practice of medicine, and it is difficult to determine which is the stronger, except by searching self-questioning! "I" versus "Me" or "Heads" versus "Tails."

Heads: Which causes me the greater pain or anger?—the patient who, though extremely fond of me, wilfully disregards my advice, or one who follows my instructions meticulously even though he obviously detests me?

Tails: Well, I can say at once that the patient who both dislikes and disobeys me causes far less heartache than either of the others. He's a nasty piece of work and he can stew in his own juice.

Heads: Quite so. In other words he has no status in my little world, so we shut him out? The only world that is acceptable to us comprises patients who like us and those who trust us sufficiently to put themselves in our power?

Tails: I suppose so, but of the two low motives I rather think my favourite is the will to power. It works most beneficially, you know, for if we find a section of suffering humanity putting its trust in us, we in all humility realise our inadequacies and strive to lessen them.

Heads: Yeah? In order that this happy state of affairs shall be maintained on a securer basis?

Tails: Keeping up appearances is as low a motive as you could possibly want—and surely it works out well if it means building well and truly behind our façades.

* * *

Why is the façade so necessary? We speak rather slightingly of a physician or surgeon as a "good showman" and yet there is an element of envy in our censure, for we are all tarred with the same brush. If, as according to Miss Joyce Dennys, all our wives wear false noses, how much more truly do we all wear false faces. We simulate an interest and a confidence we are often far from feeling, and we dissemble our encyclopædic ignorance. Because if we didn't our medicines wouldn't work—and that's that. We are the second greatest histrionic profession in the world, with the Bar a close runner-up. "It isn't what he says but how he says it," applies just as much to Sir John Upper-Gum Tree as it does to Ronald Squire.

In a way I think it is unfortunate that we are such a healthy crowd and forget what it is like to be ill. When I am ill, I like the colleague who attends me to admit that he doesn't know for certain what is the matter, but that he has seen one or two exactly similar cases; that there is no prospect of death, disfigurement or chronicity, but on the contrary every prospect of regaining perfect health within a specified time.

While my colleague is on my job I can shut my eyes to the fact that I can swim faster than he can and have read more Elizabethan dramatists, and I invest him with all sorts of god-like powers. He makes his entry as if visiting me were the one eagerly anticipated event in his day. Although in a healthier moment I should realise that he can learn precious little from that stethoscope which travels so rapidly over my chest, and that his intent searching expression doesn't mean a thing—I wear one myself when examining patients—all the same my heart beats quicker as he examines me. How pleased I am if he notices me not only as a patient but as a person! He listens interestedly while I air what must be to this Super-Man the most childlike views on art, literature and life. While drying his hands he appraises—nay covets—my small Arnesby Brown panel. I resist a wild impulse to ring for paper and string so that he may take it with him—simply because it would be too embarrassing for him. Instead I resolve to send it round with a nice little note when I am finally out of his hands. (Don't worry: I shall have come to my senses by then.) He rises and crosses to the door on a good laugh-line, pauses hand on knob and says—regretfully it seems to me—that there will be no occasion for him to see me for a couple of days, and that I'm doing well. My delight that I please him, both as a patient and as a fellow-man, knows no bounds: and when he is gone I recapitulate all he has said and the way he said it—and his silences—and read all sorts of subtleties into them. I am in fact the Perfect Audience. Surely it is his duty to play up to me?

Now I come to think of it, it doesn't always work out like that. When I was a medical student, a sudden patch of analgesia over one of my peroneal nerves told me I had incipient disseminated sclerosis. . . . After I had borne this as long as I could in silence, I started bothering Harley Street. Harley Street was ever so kind, examining me carefully, reassuring

me and sending me away completely comforted until I reached Great Portland Street, when I knew that kind-hearted Harley Street was lying purposefully. . . . "Poor devil," it was saying even now, "he's done for, but it develops so slowly and with such amazing remissions that he may as well live in a fool's paradise for as long as he can. . . . A rotten ending. . . . Quite a decent chap." (There was at this time quite a lull in cures for disseminated sclerosis.) I soon detected a kinder and more considerate attitude towards me on the part of all my hospital chiefs: They Knew. In fantasy I died beautifully many times, sometimes saying "Tell Alison I loved her," and sometimes keeping bravely quiet about all that business. . . . I was ploughed in the Conjoint medicine. One of the questions was about disseminated sclerosis and it spoilt my afternoon: I knew so much about it that I didn't know where to begin.

Eventually I cured myself by taking out an insurance policy against sickness. My paranoia did not extend to insurance company physicians. There would be no false sentiment about them. This time I emerged from the consulting-room completely cured.

On looking back I see that some pretty obvious psychological mechanism forced me at that time to take refuge in a phobia, and if it hadn't been disseminated sclerosis it would have been something else equally incurable. Indeed I remember that one evening it was touch and go whether it wasn't really subacute combined degeneration, and on another occasion (in the very early hours) it was a nasty touch of uræmia.

As a result of this experience I was able to "cure" several medical students suffering from phobias who came to me when I was a house-physician—without any psycho-analysis, and, sadder still, without any rake-off from the insurance companies.

* * *

To return to our façades: Where does the extension of one's personality cease to be legitimate? Dr. Watson's bowler-hat and homespun tweeds were as much an expression of the man as Holmes's dressing-gown and fiddle. He wore them because he felt dimly that they were fitting and perhaps because his wife liked him in them. He was quite unconscious of any impression he might be creating. I venture to say that quite a number of us are not so innocently unaware of our public for whom we play a rôle which we hope will meet with their applause. For make-up we employ severally monocles, side-whiskers, butlers, chauffeurs, high-speed cars, knowledgeability about wines politics music and books, a didactic manner with colleagues—or even the more subtle negative mufti of patched jackets and shapeless flannels: "*I* am the sort of man who doesn't [need to] bother about appearances, I am."

Extroversion is by no means confined to members of the medical profession, but the regularity with which they find themselves placed up-stage-centre gives them peculiar opportunities to develop it which are denied to citizens in humbler vocations. In all walks of life interests are apt to be pursued with one eye on an audience. Art galleries are trudged round and concerts sat through not for the immediate personal enjoyment so much as for the later satisfaction of Being Able to Talk About It. The various book societies (unwittingly perhaps) have fostered this bogus-reading habit. At dinner parties one finds that one's neighbours, having all browsed in the same pastures, are all braying in the same key.

And after all what does it matter?—so long as we don't lose sight of our real selves behind our masks and don't confuse ourselves with the parts we are playing: in other words, so long as we remain humbugs and don't become hypocrites? A man with natural gifts of voice and personality is a fool not to exploit them if they enable him to do his job better. It is only when his inner self bows down and worships his Conception of his Rôle, and he can no longer laugh with those who rag him about it, that he has lost his soul.

Ask any actor.

BICENTENARY OF QUEEN CHARLOTTE'S

THE bicentenary festival dinner of Queen Charlotte's Maternity Hospital, London, was held at the Savoy Hotel on June 7 when about 200 guests were present. The DUKE OF KENT, who presided, said that Queen Charlotte's was the first hospital to admit the unmarried woman with her first child, and was foremost in making provision for the confinement of mothers in their own homes. In point of fact it was founded not by Queen Charlotte but by a famous obstetrician, Sir Richard Manningham, who engaged a building next to his own house in Jermyn Street in 1739, five years before the Queen's birth: it is therefore the oldest maternity hospital in the Empire, and from the beginning has depended upon voluntary contributions. In 1809 the Duke of Sussex became its president and chairman of the committee, and his mother, Queen Charlotte, and his brothers gave their patronage: the Duke of Cambridge succeeded him in the presidency. The hospital was rebuilt in 1856 and extended in the following year to what now constitutes the old building in Marylebone Road: the present structure on the five-acre site at Hammersmith was begun in 1929. Since its foundation the hospital has confined over 275,000 mothers while its medical school has trained over 15,000 students and midwives; at present there are 150 nurses and 6 medical officers in residence, and the hospital has 27 consulting specialists—figures which will increase when the new buildings are occupied.

Mr. EARDLEY HOLLAND said that the hospital annually cares for over 4000 women during pregnancy and confinement, and is a training and research centre which serves as a model for other institutions: as many as a quarter of its resident medical officers have become obstetric specialists so that Queen Charlotte's may rightly be called "the staff college for obstetricians." In the new buildings a mother would hear the song of the blackbird instead of the roar of a motor-bus and she would see not bricks and mortar but trees. With 200 beds it will be the largest maternity hospital in the Empire, and is designed for the maximum of safety; the wards will be small with not more than six beds, each curtained off (very ill people will have single rooms) and all beds will be fitted with individual light, bell, wireless plug, and power point. He emphasised the fact that pay-beds will be provided for patients with moderate means. The isolation block and research department were built on the new site in 1930, and as a measure of their importance he referred to the decline in the mortality-rate due to hæmolytic streptococcal infection at the isolation block, from 20 per cent. during 1931–35 to 5 per cent. in 1936—after the introduction of sulphonamides. Associated with this was a fall in national maternal mortality-rate per 1000 births from 4 in 1936, to 3·1 in 1937, and 2·9 in 1938, the lowest figure ever recorded in this country.

Sir WILLIAM JOWITT paid tribute to the nursing staff, saying that out of the total cost of about £500,000 a sum of £170,000 is still needed, half of which is for the nurses' home. He stated that for £1000 a mother's bed may be endowed in perpetuity; for half this sum a nurse's bed or baby's cot can be endowed, or four nurses can be trained.

Nurses from Queen Charlotte's then collected donations, which totalled £6125.

LETTERS TO THE EDITOR

SULPHANILAMIDE IN TYPHOID FEVER

SIR,—In your last issue Dr. Harries and his colleagues describe the treatment of seven cases of typhoid fever with the sulphonamides—sulphanilamide and M. & B. 693. Although they are cautious in making claims for this treatment, the impression to be gained from their article is that sulphonamides should be used in similar cases. Thus they state that sulphanilamide can exercise a bacteriostatic effect on *B. typhosus* in the blood-stream, though from the next sentence it seems that the reference is actually to M. & B. 693 (which is not sulphanilamide).

I have seen two patients with typhoid fever who had been treated, the one with sulphanilamide, the other with M. & B. 693, before the establishment of the diagnosis.

The first was a man aged 75 years, whose symptoms started on Dec. 28, 1928. He was given sulphanilamide, 3 grammes daily, from Jan. 8 to 16. The temperature throughout this period varied from 101° to 103° F., and the general condition, including the development of nocturnal delirium, was exactly that which would be expected at this stage of the disease. I advised withdrawal of the drug. The fever lasted for five weeks and recovery followed.

A more striking instance of the uselessness of sulphonamides for typhoid fever was presented by a female aged 43, whose first symptoms arose on Dec. 8, 1938. She was given M. & B. 693 in 1-gramme doses five times daily from Dec. 14 to 23 inclusive. For the first twenty-four hours of this treatment the temperature fell from 103° to 99°; and then it rose to a daily swing of 101° to 104°. Blood taken on Dec. 20 and 23, when she was saturated with M. & B. 693, and was deeply cyanosed as a result, gave positive cultures of typhoid bacilli. The illness was a severe one, the pyrexia lasting for seven weeks.

Here then are two instances in which sulphonamide treatment, even in large doses, was powerless to influence the course of typhoid fever. In view of the great natural variations in the manifestations of the disease, I question whether a case has been made out for the employment of drugs which are by no means devoid of danger.

I am, Sir, yours faithfully,

Harley Street, W.1, June 12. A. H. DOUTHWAITE.

THE APPENDIX MASS

SIR,—Mr. McNeill Love in his article on the appendix mass in your issue of June 3 raised the perennial but extremely important question of treatment.

In my own opinion the "mass" due to an inflamed retrocæcal appendix is the only one which can be treated expectantly with any safety. It is due to the induration of the cæcal wall, and the appendix is as a rule well "shut off" from the general peritoneal cavity. This is the commonest position in which to find the appendix at the subsequent interval operation. Where the appendix is not in this position the "mass" is formed by adherent omentum and coils of small bowel, and is lying in the general peritoneal cavity or in the pelvis. In these cases I believe great risk is incurred in adopting expectant treatment. The main difficulty is the correct diagnosis of the origin of the "mass," and if this is appendiceal, of the position of the appendix. The latter may be known from a previous barium meal or enema examination. The character of the symptoms and signs, which I have discussed fully elsewhere, may suggest a retrocæcal position. When a patient is first seen after the third day of the attack and has a palpable "mass" in the right iliac fossa, and the evidence is in favour of retrocæcal appendicitis, but without signs of suppuration, then expectant treatment rather than immediate operation is advisable, except in children.

If the appendix perforates, a retrocæcal abscess forms, which, as a rule, readily localises; but spread to the subphrenic region is possible and a perforation near the base of the appendix may result in immediate general peritonitis. If the evidence points to the presence of or the development of a localised retrocæcal abscess (leucocytosis, true rigidity in the loin, palpable "mass" in the right iliac fossa), then operation is generally indicated; but great care is necessary in estimating the optimum time for interference, especially in middle-aged and elderly patients. These are often surprisingly well, especially if not seen until 7–10 days after the onset of the attack; yet simple drainage of their abscess may end fatally owing to such complications as secondary hæmorrhage, paralytic ileus and portal pyæmia.

Although the appendix is undoubtedly the commonest source of a "mass" in the right iliac fossa, yet occasionally errors in diagnosis are made. Apart from the difficulty of subsequent explanation to the friends and relatives, the prognosis may be affected adversely by the delay. I have found the following conditions, admittedly rare, simulating an appendix mass: (1) inflamed Meckel's diverticulum; (2) inflamed solitary diverticulum of the cæcum; (3) tuberculoma of the ileum; (4) tuberculous hyperplastic cæcal tumour; (5) abscess of external iliac lymphatic glands.

I am, Sir, yours faithfully,

Harley Street, W.1, June 12. CAMERON MACLEOD.

THE PROBLEM OF MEDICAL LITERATURE

SIR,—No-one can deny that the present state of medical literature is simply chaotic, nor is there any prospect of improvement. The general problem is nobody's business and so it drags on with the result that thousands of pounds are wasted and there is much delay in bringing the fruits of research to the public benefit.

Take the position of the average doctor who has an idea and wants to find out what has been done on the subject already. If he has been able to afford five guineas he writes to the Royal Society of Medicine and asks the question. The non-medical librarians of this excellent institution consult the Cumulative Index and the Surgeon-General's Catalogue, both American publications, and in due course a list of possibly some hundreds of references arrives. They are in all manner of languages; some are relevant, many are not. He next tries to find where the journals are and he will, if he is lucky enough to locate them at all, find they are scattered all over the libraries of Britain; some are already on loan, some are in libraries which do not lend. He will discover that many libraries take in the same journals and that most have had to restrict their intake to what they can afford. They continue the old classics because they do not wish to spoil their existing sets. Having obtained a journal—which journal may be in Hungarian—he has to find a translator and having had it translated he may find that the paper is not relevant after all. And so he goes on until any enthusiasm he has had becomes melted. Too often

the list of references is appended unread and so the mountain of unnecessary literature grows.

Surely the time has come when there ought to be a greater measure of coördination amongst libraries to make the lesser-known journals more readily accessible. In London alone there are no fewer than fourteen general medical libraries, all belonging to different bodies who are jealous of their own possessions. It is difficult in the circumstances to see what might be done, but two lines are evident and these may be stated quite shortly. It is most desirable that medicine, like chemistry and physiology, should have an adequate abstracting journal. Nor is that enough. Every few years there ought to be systematic reviews in all subjects, somewhat on the lines of Allbutt's "System of Medicine" and adequately supplied with references to the original papers.

It may be asked who is to pay. From the publisher's point of view it is, as recent publications have shown, a paying proposition. I believe writers would be forthcoming if there was a provision of adequate clerical assistance, and the expense would be negligible compared with what would be saved in preventing undue repetition of investigations. Research workers are apt to reply to this that they know all the new work. This may or may not be true in special instances: publications in the best medical journals, by men of eminence and others, show that generally it is not. It would be easy (but invidious) to give examples. The difficulties are great for the experienced workers; what chance then have the younger men who, full of promise and enthusiasm, find themselves up against a system which belongs to a bygone age when communications were difficult and journals few? It is on them that the future of medicine really depends. Why should they be allowed to waste their precious hours and often public money doing work which would be unnecessary but for sheer lack of coördination amongst the medical bodies concerned?

I am, Sir, yours faithfully,

R. J. S. McDOWALL.

Department of Physiology, King's College, London, June 12.

THE ORIGIN OF FIBROIDS

SIR,—I was much interested in the paper by Prof. Lipschütz and Dr. Vargas in your last issue, and also in your leading article. The production of uterine fibromyomata by means of repeated injections of follicular hormone is a most suggestive finding, and is comparable to the work of Laccasagne and Burrows.

Lipschütz and Vargas say that "it seems very probable that the uterine fibromyomas in women are a local sign of an endocrine disturbance." I think there is abundant clinical evidence to support this statement, apart from their animal experiments. As is pointed out in your leader these tumours rarely appear before the menarche or after the menopause, and they usually regress after the menopause, whether natural, surgical, or the result of radiation. Among other relevant characteristics I may mention the disproportionate increase in size of fibroids during pregnancy, and their rapid involution in the puerperium. This corresponds with the great increase of follicular hormone during pregnancy and its decrease in the puerperium. Again, when operating for fibroids, one often finds follicular cysts in the ovaries. Further, fibroids are commoner in unmarried women, and I think also in married women who are voluntarily sterile: in both these types the incidence of ovarian dysfunction is higher than in parous women. Yet another point is the common association of fibroids with endometriosis.

I suggest that we have here abundant clinical evidence of hormonal disturbance. It will be interesting to note whether fibroids develop in any patients receiving large doses of follicular hormone. The possibility that fibroids may ultimately become amenable to hormone therapy is a fascinating one, and it would be interesting to test this possibility in a case of impacted fibroid associated with retention of urine, for it should be possible here to obtain objective evidence of a decrease in size when the next menstrual period occurred.

I am, Sir, yours faithfully,

Manchester, June 11. T. F. TODD.

PROPHYLAXIS OF WHOOPING-COUGH

SIR,—In an annotation on April 8 (p. 835) you stated that "it is generally agreed that if a vaccine prepared from *H. pertussis* is to have any prospect of success freshly isolated smooth (phase I) strains must be used" and that "a total of at least 80 million organisms must be injected." This is undoubtedly the current opinion. But, while the admirable field experiments of American workers, Sauer and Kendrick in particular, have established the efficacy of such vaccines, it does not necessarily follow that the success of the vaccine is dependent on the use of freshly isolated phase I strains, since the use of high doses accompanied the introduction of such vaccines.

We are not aware of any conclusive tests in children in which vaccines prepared from old laboratory strains, still in phase I, or from rough strains (phase III) have been directly compared in the same doses with vaccines prepared from freshly isolated strains. The cautious conclusion of Leslie and Gardner,[1] to whose study of the agglutinative phases of *H. pertussis* a great part of the revival of interest in the prophylaxis of pertussis must be credited, was that "the general results of our immunity experiments are therefore irregular and further work is clearly needed. But the evidence so far obtained, coupled with the serological findings, indicates that, for prophylactic vaccination of the human subject, phase I vaccines made from freshly isolated strains are more promising than those made from old cultures." Leslie and Gardner's evidence is now less convincing, because they showed that the death of guineapigs, the animals employed in their experiments, was solely toxic, and Evans and Maitland [2] have since failed to find any evidence of antigenicity of pertussis toxin, a finding we can confirm.

These objections are not merely captious. It is not always possible to obtain fresh strains of *H. pertussis* in interepidemic periods in Australia. Burnet and Timmins [3] demonstrated the high susceptibility of the mouse to experimental infection by the intranasal route and suggested the use of this method in the investigation of the efficacy of various types of vaccines. Following this lead, we have been able to show that the sera of certain adult contacts, and of some patients convalescent from whooping-cough, can passively protect mice against death or infection with lethal doses of *H. pertussis*. Similar protective properties are demonstrable, but in a lesser degree, in the sera of children immunised by Sauer's method, but not in the pooled sera of healthy adults or of

1. Leslie, P. H., and Gardner, A. D., *J. Hyg., Camb.* 1931, **31**, 423.
2. Evans, D. G., and Maitland, D. B., *J. Path. Bact.* 1937, **45**, 715.
3. Burnet, F. M., and Timmins, C., *Brit. J. exp. Path.* 1937, **18**, 83.

control unimmunised children. Strains maintained at these laboratories for three years retain full virulence for the mouse and remain in phase I. Presumably these strains should provide as efficient antigens as fresh strains, though we have not yet tested the sera of children immunised with such vaccines, or with vaccines prepared with rough avirulent strains. Tests of rabbit sera indicate that, in that animal, rough strains may be as efficient as smooth strains in stimulating the appearance of protective antibody. Full details of the work on which these statements are based will be published shortly in the *Australian Journal of Experimental Biology*.

Naturally, these findings do not affect your conclusion that, until more information is available, vaccines for prophylactic immunisation should be prepared by methods proved to be efficient.

We are, Sir, yours faithfully,

ESMOND V. KEOGH,
EDGAR A. NORTH.

Commonwealth Serum Laboratories, Melbourne, May 19.

THE PRACTITIONER AS SCIENTIST

SIR,—It might be well to recall in reference to Lord Stamp's address, published in your last issue, a remark of the late Sir James Goodhart, sometime physician to Guy's Hospital. In speaking of new remedies, his advice was: "Go on using it, my boy, while it is still curing."

I am, Sir, yours faithfully,

Cardiff, June 9. A. W. SHEEN.

CLOSED TREATMENT OF COMPOUND FRACTURES

SIR,—I have read with interest the letter of Dr. J. Trueta Raspall in your issue of April 8, in which he replies to the criticisms of Colonel E. M. Cowell and Colonel P. H. Mitchiner on the closed treatment of compound fractures due to war wounds. My experience here in Shanghai, during the Sino-Japanese hostilities in the late autumn of 1937, tends to confirm all that Dr. Trueta claims for the method; this in spite of the fact that the wounded had often been lying out on the battlefield for two or three days before admission to hospital and on arrival already had heavily infected wounds. I must admit, however, that gas-gangrene and tetanus were very uncommon, owing no doubt to the fact that human manure and not horse or cow manure is used by the Chinese farmer. Had these infections been common, I should have been reluctant to use the closed method.

I agree with Dr. Trueta that a wide excision of all damaged tissue is essential, and that a wide and open gutter type of wound should be made, so that the path of least resistance for the discharges is towards the surface and not up the intermuscular planes. The method is most effective in the distal parts of the limb, where immobilisation by plaster is absolute, the slightest muscular movement tending to encourage the spread of infection. Most of the wounds treated were shell and bomb wounds with large areas of destroyed soft tissue; excision of these wounds usually left the desired type of wide-open cavity for closed plaster treatment.

I have had little experience of through-and-through rifle wounds, and the experience I have had has been in civil practice, with patients who have had a daily bath and clean underclothing and have been admitted to hospital within an hour of receipt of their wounds; and, although there have been successful results, I feel sure that this has been due to the above conditions, which made deep infection improbable and are not to be hoped for in the case of a soldier on active service. In these cases the principle of a wide-open wound for drainage purposes cannot always be applied without sacrificing healthy structures; the second principle, however, of absolute immobilisation is still essential and is best attained by a split plaster case, which allows for swelling of the limb and inspection if necessary.

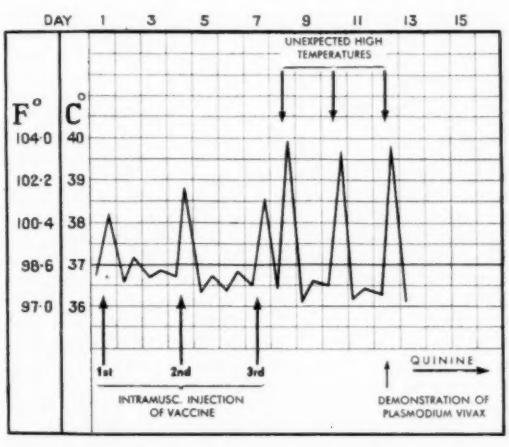
I am, Sir, yours faithfully,

Shanghai, May 15. A. D. WALL

ACTIVATION OF MALARIA BY VACCINES

SIR,—In THE LANCET of June 3, p. 1262, I read with great interest the observation of Drs. Murgatroyd, Findlay, and MacCallum concerning a long-latent infection with *Plasmodium ovale* becoming manifest after yellow-fever vaccination. In 1926 I made a similar observation after the administration of another sort of vaccine.

Having diagnosed ulcerative colitis in a woman of about 30, I prescribed an autogenous vaccine. The injections were administered by Dr. M. Hetényi twice a week, and the first two were followed by shivering, and sometimes rigors, with fever 100–102° F. Pyrexia appeared four to six hours after the intramuscular injections. On the day after the third



injection chill and fever reappeared and were more intense than previously. At first the possibility of a local infection at the site of the intramuscular injection was considered, but no acute inflammation or infiltration was detected. Fortunately the temperature of 104° F. lasted only a few hours and then subsided, with copious perspiration. Two days later, however, rigor and high temperature returned, without any intervening injection of vaccine (see the accompanying chart). The patient gave no history of malaria. Blood-films, prepared during a third attack of fever, revealed the presence of the parasites of tertian malaria and the patient was cured by the regular administration of quinine.

I think that there is no doubt about the activation of latent malaria by injections of vaccine. The above case is of special interest because the patient not only gave no history of previous malarial infection but also denied ever having been in a tropical or a subtropical country. Her husband, however, had been infected with malaria in Albania in 1918, and finally cured in 1923. It is impossible to find out whether, and if so when, the husband's malaria was transmitted

by an anopheles to the patient, in whom no symptom of malaria was observed, the infection remaining latent.

During the Great War we saw many patients suspected of malaria, and in some cases of latent malaria the correct diagnosis was made by examining the blood during an attack of fever artificially produced by injecting protein.

I am, Sir, yours faithfully,

EUGENE ROSENTHAL,
Lecturer in the Royal University of Budapest.

Budapest, June 7.

CHEMOTHERAPY AND THE EYE

SIR,—In view of the use of 2-sulphanilyl-aminopyridine (M. & B. 693) in chemotherapy and its possible application in ophthalmology it may be interesting to record that it is excreted in the tears. J. G. Bellows and H. Chinn (*J. Amer. med. Ass.* May 20, 1939, p. 2023) have observed that, after oral administration, sulphanilamide penetrates into the eye; the concentration in the chorioretinal layer approached that found in the blood. After giving M. & B. 693 to several subjects in a dosage of 0·02–0·05 g. per kg. of body-weight I was able to detect the drug in the tears, as free amino body, after four hours (when the concentration in the blood is usually at a maximum) in a concentration of 3·5–7·2 mg. per 100 c.cm. These concentrations were similar to those found in the blood.

I am, Sir, yours faithfully,

R. WIEN.

Pharmacological Laboratory, 17, Bloomsbury Square, W.C.1, June 9.

PUBLIC HEALTH

A Minority Programme

THE Medical Practitioners' Union, meeting at Blackpool last weekend, adopted a nine-point programme for the improvement of the general medical services of the nation. An introductory memorandum emphasises the danger of reforms being made at short notice by political parties, and recognises that "in accordance with the normal mode of law-making in this country, the next extension of medical service is almost certain to be designed to appeal to as many voters as possible, with as little disturbance of existing interests as can be managed." In putting forward its own plans the union refers to the legitimate claim of the profession to be properly paid, but frankly declares that the amount and method of remuneration of practitioners are professional problems which cannot possibly affect the decision as to what steps can best be taken towards a complete health service for the nation. Its own recommendations are based on extension of the general-practitioner service to everybody; this it thinks much more important than the provision of extra specialist and institutional services, which can already be provided by county and borough councils. The first step should be to extend the benefits of the panel system—and only those benefits—to the whole population, without distinction of wealth. (If this entailed hardship for doctors practising chiefly among the well-to-do this hardship would have to be remedied.) The union would abolish insurance contributions and make medical benefit a direct charge on the state; but except in thinly populated areas it would continue the payment of practitioners on a capitation basis. Though, like all treatment services, the general practitioner's work would eventually come under the control of the Ministry of Health, operating through local committees analogous to the insurance committees and panel committees of today, it would *not* be controlled by the municipal medical officer of health; the opportunities and education of that officer do not fit him to supervise treatment services, and his political position and relations with his council make it hard for him to do even his existing work efficiently.

The union also demands that the poor-law taint should be removed from all forms of medical treatment, criticises the existing maternity services because they disconnect the practitioner from obstetrics, and seeks changes in the General Medical Council and medical education. It reiterates its view that there is little value in wrangles about ideal systems when all energies need to be concentrated on improvement of existing services. Lord Horder, who addressed the conference on Saturday, congratulated the union on the practical nature of its policy, and remarked on the regrettable tendency to regard medical and social improvements as planks for politicians. He deplored the retreat of the family doctor before the advance of the bureau, and on the larger question of national health said that to preach health to people living below the poverty line is gross hypocrisy.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 3, 1939

Notifications.—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1427; diphtheria, 717; enteric fever, 25 (32 "expected"); pneumonia (primary or influenzal), 728; puerperal pyrexia, 195; cerebrospinal fever, 30; acute poliomyelitis, 13; encephalitis lethargica, 5; relapsing fever, 2 (Preston, Crosby); dysentery, 31; ophthalmia neonatorum, 99. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 9 was 2954, which included: Scarlet fever, 648; diphtheria, 539 (carriers, 25); measles, 3; whooping-cough, 941; puerperal fever, 18 mothers (plus 9 babies); encephalitis lethargica, 304; poliomyelitis, 3. At St. Margaret's Hospital there were 21 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 126 great towns, including London, there was no death from smallpox, 2 (0) from enteric fever, 3 (0) from measles, 1 (0) from scarlet fever, 18 (4) from whooping-cough, 10 (1) from diphtheria, 39 (7) from diarrhœa and enteritis under two years, and 14 (1) from influenza. The figures in parentheses are those for London itself.

Thurrock and Huddersfield reported the only deaths from typhoid. Manchester had 2 deaths from whooping-cough. Fatal cases of diphtheria were scattered singly over 10 great towns. Six deaths from diarrhœa occurred at Liverpool, 4 at Birmingham.

The number of stillbirths notified during the week was 233 (corresponding to a rate of 39 per 1000 total births), including 42 in London.

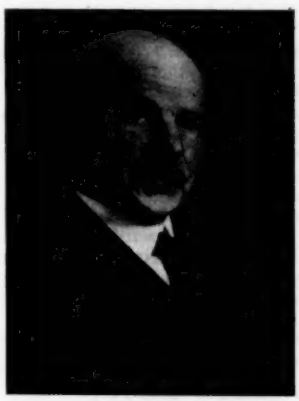
"... The widespread tendency of cutting down consumption and actually reducing living standards as a consequence of armament policies brings out the sharp contrast between this form of public spending and public spending designed as a recovery measure. Although both produce an initial increase of activity, the latter aims at stimulating consumption, whereas armament spending has to be accompanied by special measures to prevent any expansion of consumption and a rise in living standards."—J. G. WINANT in his first annual report as director of the International Labour Office.

OBITUARY

ARTHUR LOGAN TURNER

M.D., LL.D. EDIN., F.R.C.P.E., F.R.C.S.E., F.R.S.E.

Dr. Logan Turner, who died in Edinburgh on June 6, was the second of the five children of Sir William Turner, anatomist and medical educationist, and Agnes Logan, farmer's daughter of Burnhouses, Berwickshire. Shortly after his birth his father succeeded to the chair of anatomy in the University of Edinburgh and he later became principal and vice-chancellor of the university and its representative on the General Medical Council. Sir William was a great teacher and organiser and in his leisure a keen traveller, but in his home there was nothing in the nature of sport. It was a stimulating house to live in, often full of guests eminent in science, literature or art, though Sir William never lost contact with student life. Arthur followed his brother to Fettes College and Edinburgh University where he took his medical degree in 1889; two years later he became F.R.C.S.E. After a house-appointment and assistantship to Thomas Annandale he had a mind to become a general surgeon, but was dissuaded by an injury to his hand which led him instead to specialise in diseases of the ear, nose and throat. His first appointment in this specialty was surgeon to the Deaconess Hospital, and he was appointed laryngologist to the Royal Infirmary in 1906, remaining there until 1924 when he became consulting surgeon. During the late war he served at the 2nd Scottish General Hospital with the rank of captain, R.A.M.C. (T.F.). After retirement from active work at the Royal Infirmary he was elected president of the Royal College of Surgeons of Edinburgh and of the Medico-Chirurgical Society, and he was made an hon. F.R.C.P. In 1928 he was Semon lecturer, and he was also president of the section of laryngology and otology of the Royal Society of Medicine, and corresponding member of many American and continental societies. But his public service and a considerable private practice never stood in the way of the literary work in which he found his chiefest pleasure. He was joint editor of the *Journal of Laryngology and Otology* 1921–29; his "Manual of Diseases of the Nose, Throat and Ear" went through several editions; and his historical sense found play in the biography of his father published in 1919 and in the "History of the University of Edinburgh, 1883–1933," which was a supplement to Sir Alexander Grant's story of its earlier years. When the Royal Infirmary completed its second century it was Logan Turner who told its story, which contributed to the success of the appeal for the extension now happily completed.



[*Drummond Young, Edinburgh*

Dr. Edwin Bramwell writes: "Logan Turner never seemed to age. He was never ill; he gave the impression, as I said to him not many weeks ago, that he might live well into the nineties. His passing, as the result of a coronary thrombosis, came as a shock to his many friends and is a grievous blow to the Edinburgh medical school. We could ill afford to lose him.

"A distinguished research worker and exponent of his specialty, an indefatigable worker who insisted on meticulous exactitude, an impressive teacher and an able organiser, I doubt whether anyone has ever served a hospital charge more conscientiously or made better use of the clinical material at his disposal. Always encouraging, considerate and generous to a fault, his personality compelled the affection and respect of his juniors. Little wonder that he was regarded by them as the ideal chief. Thorough in his methods he availed himself to the full of extraneous expert knowledge on the borderland of his specialty. As a consultant I have known no more understanding or helpful colleague; and he was gifted too with a breadth of outlook rarely met with in the specialist. The patients' outlook and requirements were his first consideration and he inspired them with confidence.

"Turner's *alma mater* had no more devoted son. His researches into the annals of the school were outstanding contributions. The biography of his father, his 'Story of a Great Hospital,' the 'History of the University from 1883–1933,' which he inspired and edited, and the *University Journal*, which he edited during the first ten years of its existence, are records of his unflagging industry. But, quite apart from these publications which bear his name, Turner gave of his experience ungrudgingly whenever it was called for. He took an active part in the management of the Royal Infirmary and other hospitals for many years and he played a prominent rôle in many of the activities of the school. The students had no better friend, for he was always ready to enter into their projects.

"But it is especially of his personality that I would write. To say that Turner was popular would be incorrect, for he did not seek popularity and shunned publicity. He was not a witty speaker, he did not sparkle in society, he never played to the gallery. Duty was, I think, his motto. One of the most unselfish men I have ever met, he stood for all that was honourable; he was a man whom everyone trusted and in whom everyone had confidence. Even when he held strong views he would listen considerately to what others had to say; he did not try to force his opinions upon them and he was always open to conviction. If he had a failing it was his modesty—and yet this was one of his attractions. He resembled his father in many ways but without his commanding presence and impressive voice. I only once heard Turner make a speech of any length. A question of policy was under consideration, numerous facts had to be marshalled and conflicting views conciliated. It was the speech of a statesman and I saw the speaker in a new light.

"A great medical school mourns a devoted son. His intimates will remember not the versatility of his accomplishments but the simple unassuming gentleman with a subtle attractiveness and sympathy which they had the good fortune to enjoy."

Dr. Logan Turner was unmarried and is survived by his elder brother, Dr. W. Aldren Turner.

FRANCIS ROBERT SEYMOUR

M.D. DUBL., D.P.H.

Dr. Francis Seymour was at work as usual at the Ministry of Health on June 6, but he was taken ill that afternoon and died during the night of cardiac disease. Seymour was born in 1882 at Armagh, in Northern Ireland, where his father, Robert Seymour, was curate. He went to three public schools, the Royal School, Armagh, St. Columba's College, Dublin, and Campbell College, Belfast. He then proceeded to Trinity College, Dublin, where he had a brilliant career, winning the first foundation scholarship, the gold medal and a senior moderatorship in chemistry and physics, taking his M.B. with honours and his M.D. in 1907. After graduation he studied bacteriology and pathology at St. Mary's and King's College Hospitals, London, and became pathologist to the London Temperance Hospital.

In 1912 Seymour was appointed a medical inspector of the Local Government Board. Sir Arthur Newsholme was then the medical officer of the Board and his colleagues included George Buchanan, Richard Reece and Bruce Low. It was customary to attach all new entrants to a senior member of the staff "for purposes of instruction," and Seymour had the good fortune to be attached for this purpose to Frederick Mivart, who initiated him into the mysteries of official procedure and remained his lifelong friend. In the early days of the late war Seymour played his part in the work of preventing infection among the large masses of troops in training. In 1915 he was attached to the War Office and he was eventually promoted to the rank of major in the R.A.M.C. At the end of the war he became secretary to the interdepartmental committees on tuberculosis and the prevention of infectious diseases in connexion with demobilisation. Since then, as a medical officer of the Ministry of Health, he had made a particular study of the prevention and treatment of tuberculosis, and the measures necessary to ensure wholesome food- and water-supplies. On account of his special knowledge and experience he was chosen in 1934 to report on the water system of Bermuda. He also took part in a study tour in Poland organised by the health section of the League of Nations, and wrote a report on the health services in that country, which appeared in the *Medical Officer*. Both of these reports were masterpieces of clear statement and compression. In 1935 he delivered the Chadwick lecture on "Men and Masses"—an admirable survey of the evolution of public-health endeavour and a subtle analysis of preventive medicine as a philosophy. He made few appearances as a formal lecturer but he could delight an audience with his forceful delivery and his skilful mingling of wisdom with droll stories of his own invention. In 1935, too, he was appointed deputy senior medical officer of the section of the Ministry's medical department which deals with the relation of food to health and disease. Last autumn an official visit to Holland gave him a fresh opportunity for field investigation and much of his energy had since been devoted to studying the differences between Dutch health statistics and our own. In Holland, as in the other countries he visited, his understanding of men made him many close friends. Only two months ago he was promoted to be principal regional medical officer for south-west England, and had already done an immense amount of work in connexion with the emergency medical services in his area. "On the whole," he wrote a few days before his death, "I am very much pleased with the new system and think it is full of opportunity."

It was always a happy adventure to visit Seymour at the Ministry of Health. His friends knew that a warm welcome was certain, but they also had the exciting sense that something unexpected would happen. Seymour never allowed his mind to grow stale, either in his work or in his many-sided activities outside. He had no routine in word or action, and the visitor was apt to find himself, at some staid hour of the official day, plunged into a lively discussion of a problem illuminated for the first time in the clear light of Seymour's mind. He was a brilliant talker; wit and wisdom jostled with one another in his hospitable home, where discussions ranged far and wide. He invariably gave expression to his convictions, sometimes with startling bluntness, but, when it was necessary to criticise, he had the happy knack of tempering the wind by describing some humorous incident in which he himself had figured as the villain of the piece. He was a man of varied interests and had literary, dramatic and artistic talents of no mean order. The theatre was a constant joy to him. Although he had no material success as a dramatist, his plays, like his character, were vivid and true. He had a profound knowledge of dramatic technique, and it was a rare education to see a play in his company. Like so many men of literary integrity, Seymour wrote much but published little. He had a fine sense of the right word, and used adjectives sparingly. He will be remembered perhaps most of all for his ready wit and repartee, which were a source of delight to his colleagues and his many friends.

In 1916 Dr. Seymour married Dr. Ida Mirrielees Bernard and is survived by her and three daughters.

RICHARD CLARKE CABOT

M.D. HARVARD

IN this country the name of R. C. Cabot will chiefly be remembered for his books on diagnosis, and from these his readers will have formed an impression of a wise and honest physician, full of common sense, modest, and with a gift for aphoristic statement and clarity of exposition.

Richard Cabot was born in Brookline, Massachusetts, in 1868, and he died in Boston on May 8 after a long illness. He was the son of James Cabot, an overseer of Harvard University, and was educated at Harvard, where he took honours in classics and philosophy and qualified in 1892. In 1898 he was appointed physician to outpatients at Massachusetts General Hospital, and it was there that he later developed the original kind of teaching clinic that formed the basis for his "Differential Diagnosis." At Harvard he taught both medicine and logic—a powerful combination. In the medical school he was appointed instructor in 1903, assistant professor of medicine in 1908 and professor in 1918. He became lecturer in logic in the university in 1903 and professor of social ethics in 1920. The first edition of his "Clinical Examination of the Blood," which went through five editions, appeared in 1896, four years after his qualification, and he wrote his "Physical Diagnosis" in 1901 when he was assistant in medicine at Harvard. All his life Cabot took a wide interest in the social aspects of medicine, and before the war he was much quoted for his advocacy of the reorganisation of medical practice on a group system. In 1917 he went to France with the United States Medical Corps, and he served for two years at the base hospital at Bordeaux. In the last few years Prof. Cabot had given less time to teaching and more to social problems. He became professor emeritus of medicine at Harvard in 1931 and retired

from his chair of social ethics in 1934. He was president of the National Conference of Social Work in 1931 and from 1931 to 1933 was president of the Massachusetts Anti-saloon League. He wrote his "Meaning of Right and Wrong" in 1933 and his "Christianity and Sex" two years ago.

Twenty years ago, writes Dr. Octavia Wilberforce, I chanced to pick up in a medical bookshop Cabot's "Rewards and Training of a Physician" and a phrase caught my eye as an example of the modest understatement characteristic of the great. "As I look back over 25 years of medical work," Cabot wrote, "I can remember but two patients whose lives I believe I saved." I made it my business to find out all I could of this American professor. I learned that he held weekly clinics at the Massachusetts General Hospital at Boston, and when I went to the United States I determined to go and listen to him. The clinic was an experience and an inspiration. Cabot read out in detail the history, the results of investigations and the general findings in each case. The audience was a motley gathering of newly qualified internes, colleagues on the staff, and elderly visiting physicians—a negro, a Chinese, any and every type. Cabot sat on a table with his legs dangling and asked for suggestions as to diagnoses. Smilingly he extracted comments and criticisms from complete strangers both young and inexperienced and old and hard-bitten, and worked up a lively discussion. At the end he summarised with beautiful clarity the various diagnoses made, finishing with his own. Then he summoned the pathologist with his post-mortem notes. As it turned out, in one case Cabot and everybody else was wrong. It is good to remember the spirit in which he took his failure. "That is the third time I have made a wrong guess," he said, and he showed us the steps that had led him astray. Cabot emphasised how much the doctor could do for the dying. He told me that when a dying patient shared his great love for music he would play his fiddle to him. In his teaching he brought out the value of clinical sense and of the cultivation and maintenance of our five senses, the importance of the psychology of approach, and the need for "treating the human being as if he possessed a mind, affections, talents, vices and habits good and bad as well as more or less diseased organs."

THE LATE MR. BOYCE BARROW

Dr. Robert Fenner writes: In 1877, when Joseph Lister was elected surgeon to King's College Hospital, Boyce Barrow, then an assistant surgeon, was one of the first to follow his technique, although the majority of London surgeons fought bitterly against him. With Henry Smith, William Rose and Watson Cheyne he helped to make world-renowned the antiseptic surgery of King's College Hospital. His work both at King's College and the Royal Free was enormous, and his private practice became increasingly heavy.

Boyce Barrow was a man of great personal charm, a kind friend and most delightful companion. He was never of robust frame or constitution; but where work was concerned he never spared himself. As a diagnostician he was unsurpassed, and his surgical work was sound and successful. He was extraordinarily kind and thoughtful to his house-surgeons and dressers, and helped many a student over the stile at his work or in difficulties. He was a splendid horseman and kept several hacks in his stable, and was always pleased to mount a friend for a morning ride in the Row. His smart tilbury, with a cockaded "tiger" standing with crossed arms on the back seat, were well known about town. I believe he was the last to sport a private hansom, in which, with a spanking grey, he was driven to the hospitals. His knowledge of horses, and all that pertained to them; their anatomy, the treatment of their accidents and diseases; their breaking-in and their training, was extraordinary.

Although he enriched the realm of surgery with many original operations and technical improvements, he wrote little about his work; but he took meticulous care in explaining to his assistants, dressers, and students the steps of the operations he performed. He was a delightful host and companion; simple in his tastes, and beloved by his compeers and students alike; and trusted implicitly by his patients, from the very highest to the lowest in the social scale. I was a student at King's College Hospital in 1878 and had more than fifty years close association with him, both at the hospitals and in private practice, assisting him in a great many of his operations. His ready help and skill, given whenever called upon, and his unfailing cheerfulness, made him beloved by all, and his generosity to those unable to pay a "usual fee" was a great help to the practitioners who so greatly trusted him.

ALICE MARIAN BENHAM
M.D. LOND.

Dr. Alice Benham, who was in practice in Chelsea for 30 years, and was a tireless worker for social and philanthropic causes, died on June 5 at the age of 66. She was a student at the London School of Medicine for Women and qualified in 1904. When she had done her house-appointments and before she started general practice she went for a time as medical officer to a mission hospital near Madras. In September, 1914, she joined the staff of the British Women's Field Hospital at Antwerp, where she worked up to the day the Germans marched in. In 1915 she went to Russia with other women doctors and nurses to attend to the Polish refugees driven out by the German invasion, and found herself responsible for a large district in which all the Russian doctors had been mobilised. Since the war, apart from her practice, she had been physician to the St. Theresa Hostel, Chelsea, a medical officer to the Church Army Dispensary in Marylebone Road, and a keen supporter of the St. John Ambulance Brigade, being made a Serving Sister of the Order of St. John of Jerusalem last year. She also lectured to the L.C.C. evening schools and was a member of the Committee of the National Society of Day Nurseries.

". . . It is perfectly true to say that there is a growing body of practitioners who look forward to the time when there will be a salaried service, but I think it is also true that a very considerable, and probably a large and solid, majority of the profession, on the rare occasions when they think about these things at all, are strongly against any such scheme. They are willing, most of them, to have extension of medical benefit on a capitation basis, but that is as far as they wish to go. . . . My view is that the thing to aim at is some method of getting the general practice of medicine managed in groups, that the general practitioner should be persuaded to give up a great deal of his isolation so long as the best side of his individualism in relation to his patients is not affected. The aim, then, of the public health service might be to try to provide administratively an organisation within which the general practitioner can work, not to go on taking away from him little bits of work which he can do as well as, or perhaps better than, the public health worker."—Prof. R. M. F. PICKEN, *Publ. Hlth*, June, 1939, p. 261.

PARLIAMENTARY INTELLIGENCE

ON THE FLOOR OF THE HOUSE

By MEDICUS, M.P.

THE disaster to the submarine *Thetis* in Liverpool Bay moved the House deeply, as it moved the nation as a whole. The Prime Minister was right to promise a full and public inquiry. It is to be hoped that at the inquiry the question whether all possible means for saving life are being used in the submarine service will be explored. Will expert medical evidence be called? It is also to be hoped that the practical expression of sympathy for the dependents will be sufficient to meet their needs fully.

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The debate on the Colonial Office vote was not a good one from the Government's point of view. Conservatives, Liberals and Labour united in attacking the Government, and only lack of time prevented many others joining in the critical chorus. The second "review of progress in our dependencies" was issued just before the debate and was also the object of adverse criticism, which it deserved. The first review of progress appeared last year signed by Lord Harlech; but this second edition, although more voluminous, is not more informative and in many ways it is misleading.

The review of nutrition, for example, states that "in almost every territory" work of some kind is going on. Proceeding at once to deal with the spending of money to provide supplementary food for school-children it says that Ceylon spends several millions of rupees a year on this object. The next sentence deals with efforts made "in many colonies" to introduce new food crops of high nutritive value, to develop animal husbandry and to encourage home gardens. The following sentence speaks of "welfare propaganda" and "maternity and infant welfare centres." If these three sentences are a kind of index of subjects they are badly arranged; but if they are intended to indicate problems of equal importance they are misleading. In the Colonial Empire there are about 56 million people of whom 40 million are in West and East Africa. This 40 million in tropical Africa, in an area comparable in size with European Russia, are a predominantly agricultural population living on their own land, and the improvement of nutrition by new crops and animal husbandry is of so great importance that the question of the "relief measures" mentioned as applied to Ceylon is by no means of equal importance or significance.

The section on health work in West Africa may also give rise to misconceptions. This refers to malaria, yellow fever, trypanosomiasis and sleeping-sickness; there are also references to cerebro-spinal meningitis, smallpox and leprosy. It is interesting to know that the trypanosomiasis work is being done by two sections, for treatment and control, and to have the statistics of 1938—361,000 people examined, and 21,037 infected, of whom 20,416 had received a full course of treatment at the end of the year. In addition there is a paragraph referring to Yaba Medical School at Lagos, Nigeria, where Africans can obtain diplomas registrable in Nigeria. But the report does not mention that such diplomas are registrable only in Nigeria and does not discuss the vitally important question of the increase of African practitioners.

The statements are all interesting and important so far as they go. But they are little more than a catalogue. The criticism of them is that they do not reveal the real health problem of West Africa. The chief cause of death in West Africa, among Africans, is the group of respiratory diseases; pneumonia and tuberculosis are a much more serious menace to health than either malaria or sleeping-sickness. As causes of ill health the various parasitic worms have perhaps pride of place, and probably 90 per cent. of Africans suffer from one or more kinds of worm infestation.

The short reference to housing conditions in the mining areas of the Gold Coast says that in several such areas "unauthorised hovels" have been "rushed up" before control was obtained. This hardly does justice to either the mining companies or the Gold Coast medical organisation. The fact being that the Government has not either defined the health and housing duties of the mining companies with precision or accepted its own responsibility for housing of mine-workers apart from the mining companies. The result is that the many thousands of African labourers attached to the Gold Mines (and others) are living for the most part in pestilential slums. The men do not bring their wives with them and the sexual conditions are such as might be expected with gonorrhœa very prevalent. Gonorrhœa is in any case a serious cause of illness among Africans and a big factor in the relative sterility of some native populations. This disease is mentioned in connexion with the Masai of East Africa, as a cause "probably leading to the extermination of the tribe," but its general importance is not brought out.

While fully realising the difficulty of making a general survey of health conditions in the whole Colonial Empire in a few pages, it would surely be better to get what is said into some kind of perspective and draw attention to the real difficulties against which the colonial health services are fighting.

The problem of leprosy has been already mentioned and in this report it is stated that in Nigeria (population 20,000,000) there are 200,000 cases. This is hardly an estimate—it is just a guess. Other guesses by senior and responsible Nigerian medical officers (not mentioned in this statement from the Colonial Office) put the figure at nearer 1,000,000; and one very responsible estimate exceeds that figure. And the Nigerian Government are quite unable to tackle it—not because they do not wish to do so, but because they are already overloaded with other work and not provided with either the funds or the staff for leprosy work. The present plan of leaving it, for practical purposes, to the missions, cannot possibly cover more than a small fraction of the cases. Nigeria is apparently the headquarters of leprosy at the moment, and it may be that the epidemic there is at its peak. With a disease of such slow development the curve of epidemic incidence spreads over many years. But a problem of this magnitude and one depending so much on defective social conditions is not satisfactorily treated by leaving it to purely missionary effort.

"The statement relating to the Colonial Empire" does not give a clear picture of the health situation, and in the health chapter and in others it deserves the characterisation of Mr. Brendan Bracken, Conservative M.P. for North Paddington, who described it as like "a maiden aunt telling a sophisticated nephew the facts of life."

The report of the Inter-departmental Committee on Abortion, published last week, may lead to parliamentary activity shortly. It will certainly be considered by the committee of medical Members of Parliament.

FROM THE PRESS GALLERY

Health Services in the Colonies

IN the House of Commons on June 7 Mr. MALCOLM MACDONALD, Secretary of State for the Colonies, in introducing a vote for expenses of the Colonial Office, gave a review of the health services in the colonial territories. He said that just as the agricultural scientists were waging a ceaseless campaign against the pests and diseases which afflicted agricultural produce, so the medical scientists throughout the colonial Empire were waging a similar campaign against the pests and diseases which afflicted mankind. Man's powers of aggression were puny compared with the powers of conquest of an insect like the tsetse fly, which could descend suddenly on the cattle and the men of a settled district and make life so intolerable that they moved to other lands, and so before long scores of square miles of territory returned to waste and bush whose practical sovereignty belonged to the tsetse fly. Medical scientists had been counter-attacking for years past, and were reconquering those territories which had been taken by that insect. But it was not only in the case of sleeping-sickness that their medical scientists were gradually reducing the ravages of human diseases. They were doing the same with yellow fever, leprosy, yaws, malaria, tuberculosis and other diseases.

In other ways too, he said, they were seeking to build up the health of our fellow citizens in the colonies. For instance, sometimes a cause of illness lay in malnutrition, and often it was due not to inadequate food but to the wrong kind of food. Hence they were urging in the colonies that the inhabitants should grow a greater variety of fresh foodstuffs for their own consumption. They were also seeking information as to the best types of foodstuffs required in different conditions in the various territories. They had started this year a series of field surveys on the question of diet in relation to health. A beginning had been made recently in Nyasaland and the team of experts conducting this survey would continue their investigations in other territories later on. A good deal of nutrition work was being done in regard to food for the natives. In Nairobi the Government were giving about 1000 African school-children extra supplies of milk, and in many parts of the colonial Empire the local governments were giving supplementary food to children at school. In Ceylon the government had spent as much as 1,000,000 rupees a year on feeding school-children. But the experiments were not confined to school-children; they had also started experiments with adults. In one case they chose some 200 workmen on the building works at Kampala station in Uganda, men who were drawn from a tribe which was notorious for poor physique and inefficient work. He hoped that the experiment of giving these men a full diet including meat would prove that such people could be turned into as good workmen as existed anywhere in East Africa.

There was another factor which in the colonies no less than in this country must have a beneficial effect on the health and happiness of the population, and that was good housing. More and more of the authorities in the colonies were bending their energies to the provision of proper dwellings for their people both in the towns and in the country. In many places there was a great deal of leeway to make up. There were slums in colonial capitals, too many hovels in the mining centres, and in the native reserves the mud huts did not come up to modern standards of roominess and sanitation. But there were many indications of considerable housing activities on the part of local governments. New legislation had been passed to control and ensure better standards of sanitation and building in the mining areas of the Gold Coast; slum-clearance was proceeding in Accra and Sekondi; in Uganda more sophisticated peasants were abandoning mud and wattle huts for rectangular houses with two, three, four, or even more rooms. Slums were coming down in Jamaica, and similar reports came from other colonies.

The Colonial administration were anxious that the people of the colonies should develop the mental and intellectual capacity to take part fully in the work and enjoyment of modern life. They sought to develop a sound education system in each one of the colonies, but their efforts were limited by the money available. Nevertheless, if the progress was sometimes slow it was steady. The most appropriate and surest instruments in the long run for accomplish ing the steady advancement of the African people would be educated and responsible African leaders themselves, and our main objective was to train the native people to stand always a little more securely on their own feet. Under British guidance the local populations were producing more and more of their own doctors and nurses, their own school-teachers and agricultural officers, their own civil servants and lawyers, and their own leaders in every walk of life. More and more also they were producing their own legislators and their own executive officers, and that ultimately was the crux of the whole matter.

SUNDRY CRITICS

Sir RALPH GLYN suggested that under present conditions the affairs of our colonial Empire did not receive sufficient attention from Parliament. It was up to all who believed in good government to see to it that Parliament should recognise its own responsibility and not unload it on to an unfortunate minister of the Crown. Surely it would be possible to devise something in the way of a council or committee where people interested in colonial matters could sit in more or less permanent session. He had been struck by what had been done by Italy. Where Italy found the money he did not know, but in Libya today there were excellent roads, town-planning, water-supply and schools; excellent houses, school-clinics in the villages, draining of the marshes, and so on. If it was possible for Italy to carry through these schemes surely it was also possible for the British Empire.

Mr. CREECH JONES urged the importance of creating an auxiliary medical corps for the colonies which might absorb dozens of the doctors and nurses who had been driven out of Germany and Austria and who were longing for an opportunity of performing useful work. Was it not possible to create alongside the existing medical service an auxiliary medical corps which could, for instance, man moving field dispensaries? There were populations in our colonial territories suffering cruelly from disease and over great areas no preventive work was being done.

Mr. NOEL BAKER said that social research and education should not be limited—as the Secretary of State considered that it should—by what each individual colony could afford, with perhaps a little help, mostly by way of loan, from the Colonial Development Fund. That was a fundamental error which was utterly wasteful. It would keep the native people at their present low standard of living and leave us with a vast Imperial estate which was undeveloped to the great loss of the inhabitants and of the world for which we were trustees. He would like to take the illustration of health. Some years ago when he was an undergraduate in America he was told of the devastations of hookworm in the Southern States. A doctor informed him of the work he had done to cure and prevent it. In Africa over 90 per cent. of the population were infected by some kind of worm disease. Frequently as many as six kinds had been found in the same individual. These diseases could be cured; it was only a question of money and of knowledge. He emphasised the need for increasing the medical personnel in the

colonies. The French, he said, were at the present time making an extraordinarily successful experiment in training African doctors and nurses in their institution at Dakar. Supposing we were to take into our Colonial Empire German refugee doctors, who would gladly go for a pittance a year to any job that would give them a useful avenue of occupation in their misery, they could undertake the training of the native doctors and nurses who were required. He believed that for a trifling expenditure they could in a few short years absolutely revolutionise the health conditions in our colonial Empire to the immense economic benefit of the Empire as a whole.

Mr. MACDONALD, in reply, agreed that the situation in the colonial Empire was nothing to be complacent about; but that was no reason why they should concentrate on painting an entirely black picture of colonial administration. The whole problem was where they were going to get the money to finance new developments. The Government were anxious to settle refugees from Central Europe in our colonial Empire so far as it was practicable. He promised to give careful consideration to the suggestions which had been made in the course of the debate for securing that Parliament should be able to take a larger share in the shaping of colonial policy and administration.

Collections for Voluntary Hospitals

In the House of Lords on June 13 the Charitable Collections (Regulation) Bill, which has already passed through the House of Commons, was read a second time.—Lord LUKE said that the voluntary hospitals supported the general principles of the bill which they regarded in many respects as an improvement on the old bill. The local hospital was of all local charities the one which was most essential to its area, and he urged that it should not be placed in an inferior position to any non-local charity. It seemed that under this bill a hospital's power of collecting in its own area might be restricted, whereas what the old bill described as a national charity might be able to come in and collect in the hospital's area without being limited by the same restrictions, because it might be exempted by the Home Secretary from having to get a local police licence anywhere. A hospital might serve several police areas, but all police authorities might not hold the same views about the grant of a licence; and in the new bill there was no right of appeal as there was in the old one. He hoped the measure would be amended to permit an appeal to the Home Secretary. No fraudulent promoter of a charity would risk going to an appeal.

The Adoption of Children (Regulation) Bill was read the third time and passed in the House of Lords on June 13.

QUESTION TIME

WEDNESDAY, JUNE 7

Locust Pest in Africa

Dr. HADEN GUEST asked the Secretary of State for the Colonies whether, in view of the recommendations of the survey on the locust pest in Africa which had just been published by His Majesty's Stationery Office, he would inquire into the possibilities of more continuous investigation and control throughout the territories affected.—Mr. M. MACDONALD replied: Investigations into the locust problem have indicated that the most promising results are likely to be achieved by the establishment of patrols and measures to check swarming at the permanent breeding grounds of the different species. Consultations are taking place with various colonial governments as to their coöperation in the projected establishment of international control schemes, as recommended by the Fifth International Locust Conference in Brussels last year; and I am hopeful that negotiations will shortly take place with other interested governments with a view to the establishment of these schemes.

Health of Senior Naval Officers

Wing-Commander JAMES asked the Parliamentary Secretary to the Admiralty whether consideration might be given to the institution of a medical board for senior naval officers to ensure some measure of physical fitness for those assuming appointments; and whether having regard to the fact that in the last three years three admirals had died and six others had had to be invalided he would institute such a reform without delay.—Mr. SHAKESPEARE replied: I will consider my hon. friend's suggestion, but medical records show that in few, if any, of the instances to which he refers would the eventual cause of death or invaliding have been detected by medical examination before the appointment was taken up.

THURSDAY, JUNE 8

Medical Inspection of Militiamen

Mr. STEPHEN asked the Minister of Labour how many medical boards were being set up to carry out the medical inspection of the militiamen under the Military Training Act; and how many men each medical board might be expected to examine each day.—Mr. LENNOX-BOYD replied: 149 medical boards have been set up. They will hold one or two sessions a day, each session lasting about two and a half hours. About thirty men will normally be examined at each session.

Diphtheria Immunisation in Guernsey

Sir FRANCIS FREMANTLE asked the Home Secretary how many children who had been immunised in Guernsey against diphtheria contracted the disease during the past year; how many who had not been immunised contracted the disease; and whether the cases were mild, severe or fatal in either group.—Sir SAMUEL HOARE replied: I have obtained the following report from the medical officer of health for Guernsey which gives the desired information:—

1938

Children under 14 inoculated (over 8 weeks) who contracted diphtheria 10

These were all mild cases with one exception, which, although a severe case, made a rapid recovery. There were no deaths.

Children under 14 who were not immunised who contracted diphtheria 374

The majority of the cases were mild, but a proportion were severe. There were fourteen deaths.

June 6, 1938, *to June* 6, 1939

Children under 14 inoculated (over 8 weeks) who contracted diphtheria 18

These were all mild cases with one exception, which, although a severe case, made a rapid recovery. There were no deaths.

Children under 14 who were not immunised who contracted diphtheria 298

These were mostly of a mild type, but there were some severe cases with thirteen deaths.

Drugs from Eire

Mr. WAKEFIELD asked the Home Secretary whether his attention had been drawn to the facts in a case heard in Dublin police-court on May 25 which indicated that a company with offices in London and Dublin, had been taking advantage of the provisions of the poisons legislation of Eire to sell freely to the public in Great Britain dangerous drugs, the sale of which was strictly controlled in this country; and to ask what steps he proposed to take to deal with this abuse.—Sir SAMUEL HOARE replied: Habit-forming drugs which are within the scope of the Dangerous Drugs Act are subject to restriction whether sold in the United Kingdom or sent into the United Kingdom as the result of a sale effected outside the United Kingdom. But the Pharmacy and Poisons Act applies only to sales in this country, and in the case to which my hon. friend refers the drug was one which is subject to the Pharmacy Act but not to the Dangerous Drugs Act. To control the importation of all substances which are subject to the Pharmacy Act would, I think, cause much inconvenience to legitimate trade, and experi-

ence hitherto does not suggest that legislation for this purpose would be warranted.

Civilian Anti-gas Respirators

Mr. DAY asked the Lord Privy Seal whether he would state from experiments made by the experts of his department the length of time the gas-mask which had been issued for the protection of the civilian population would give immunity and protection against the highest concentration of gas likely to be encountered; and whether he was satisfied that the materials used were amply robust for the purpose required.—Sir JOHN ANDERSON replied: The general civilian respirator provides protection for several exposures to the highest concentration of gas which is likely to be encountered in war-time conditions. The actual length of time for which the respirator would remain effective would depend in part on the nature of the gas used, and cannot be precisely stated. Trials have demonstrated that, provided the requisite care is taken of the respirator both in store and after issue, the materials used in its construction are amply robust for the purposes for which it is designed.

Mr. DAY: Are we to understand that all the respirators that have been supplied to the population comply with all these conditions?—Sir J. ANDERSON: No, Sir. That is partly the reason why I am at present engaged in accumulating a central reserve from which the respirators which have become damaged or unserviceable can be replaced.

Anti-tuberculosis Services in Wales

Mr. JAMES GRIFFITHS asked the Parliamentary Secretary to the Board of Education what steps had been taken by his department to deal with the problems of unsuitable school-buildings and the unsatisfactory arrangements for meals in schools, disclosed in the report of the Committee of Inquiry into Anti-tuberculosis Services in Wales.—Mr. KENNETH LINDSAY replied: The board have asked local education authorities in Wales to supply them with their comments on the matters dealt with in chapter VIII of this report. Authorities which have not yet replied have been pressed to do so at an early date. The board are continuing their endeavours to secure the improvement, replacement or closure of the schools which are still on the black-list, and my noble friend has made it clear that he is prepared to take the strongest possible action if this is found to be necessary in any particular case. As regards the provision of midday meals in schools the board encourage authorities and managers to make such provision wherever practicable, and it is customary in senior schools for a room for dining, and a kitchen, to be provided.

Major MILNER asked the Minister of Health what action he proposed to take to remedy the unsatisfactory conditions to which reference was made in the report, especially as regarded the low salaries paid to sanitary inspectors and inadequate travelling allowances; the appointment of unqualified persons as sanitary inspectors; the failure on the part of local authorities to accept the advice of their officers; the holding of multiple appointments by sanitary inspectors; the registration of cow-keepers and dairymen without regard to the condition of their premises; and the inadequacy of staff for the purposes of meat inspection and other duties.—Mr. ELLIOT replied: As I have stated in answer to previous questions, I have asked for the observations of the local authorities in Wales on these and other issues arising out of the report; and as soon as I have received their observations, I propose to arrange a conference at which these matters will be fully discussed.

Mr. JAMES GRIFFITHS asked the Minister of Health what sites had been chosen for the proposed hutted hospitals to be erected in Wales in consultation with the Welsh National Memorial Association; and when it was proposed to proceed with their construction.—Mr. ELLIOT replied: As stated in the reply which I gave on May 11, the districts in which the hutted accommodation is to be erected are North Wales, Central Wales, possibly in the Shrewsbury area, and South Wales. As regards North Wales, the building of huts for 200 beds as an extension of the North Wales sanatorium near Denbigh is to begin immediately, and I am personally cutting the first sod on Saturday next. My officers are visiting a number of sites in South Wales in order to select one which will meet the requirements of a complete hospital. As regards the third district, I am in communication with the local authorities with a view to attaching huts to an existing institution. Construction in these two cases will commence as soon as the final selection has been made and the necessary estimates obtained.

Rural Water-supplies

Mr. CHORLTON asked the Minister of Health whether he could report the progress made in supplying those villages that were short of water during the last drought, and to which assistance was to be provided under the special grant made.—Mr. ELLIOT replied: Since the drought, schemes have been sanctioned for 2700 parishes at an estimated cost of £9,000,000, and approximately 80 per cent. of the schemes have been completed.

Hospitals and Civil Defence

Sir HENRY MORRIS-JONES asked the Minister of Health whether his attention had been drawn to the booklet prepared by and for use at the Manchester Royal Infirmary in connexion with air-raid precautions scheme; and whether his department could use it as the basis of its recommendations to other large hospitals in our great cities.—Mr. ELLIOT replied: I have seen the booklet and consider it most useful. Its object is, however, to instruct members of the infirmary staff in their duties in the event of air-raids, and it would not be suitable for general use, in view of the wide variations between the different hospitals.

Slum Clearance and A.R.P.

Miss WARD asked the Minister of Health how many local authorities had suspended work on slum clearance and overcrowding schemes to concentrate on civil defence needs.—Mr. ELLIOT replied: As my hon. friend is aware my right hon. friend, the Lord Privy Seal, issued on April 18 last a circular to local authorities requesting them to give priority to civil defence matters over other business for the ensuing three months. Seven cases have come to my notice in which local authorities have decided to suspend housing operations for the time being as a result of this request.

Sale of Drugs by Unqualified Persons

Mr. GARRO-JONES asked the Minister of Health whether, in his present consideration of whether further control should be imposed on the sale of proprietary medicines, he would extend his examination to the control of drug sales in general and pay due regard to the desirability, in the interests of public health, of regulating the growing volume of sales of numerous kinds of drugs and packed medicines by persons of no training or qualification to the increasing commercial detriment of qualified pharmacists who had an essential place in our public health system.—Mr. ELLIOT replied: I will consider the question whether in the interests of public health any further special control is necessary in regard to the sale of drugs by persons other than qualified pharmacists.

MONDAY, JUNE 12

Militiamen and the R.G.'s Classification

Mr. OLIVER asked the Minister of Labour whether, in view of the fact that Clause 4 of the Military Training Bill provided, for the first time, for a medical examination of a comprehensive cross-section of the male, age-group 20–21, and taking into account the results of the examination conducted by the Ministry of National Service in 1917–18 on men of 18 years of age in conjunction with the present lack of knowledge as to the health and physique of corresponding sections of the male population, he would consider arranging for the medical boards to elicit sufficient information from the examinees to enable the results to be classified according to occupational and economic status by adopting the Registrar-General's social classifications as employed in the Decennial Supplement for 1930–32, Part II (*a*), Occupational Mortality.—Mr. ERNEST BROWN replied: The records of the medical examinations of militiamen will yield valuable information as to the health and physique of men of different occupations in the 20–21 age-group, but for technical reasons it

will not be possible to classify the results in the way done in the Decennial Supplement.

Conference on Cardroom Dust

Mr. SUTCLIFFE asked the Home Secretary if he could make any further statement with regard to the Manchester conference on cardroom dust.—Mr. PEAKE, Under-Secretary, Home Office, replied: Certain preliminary investigations are now being made, and it is hoped to hold the proposed conference early in July.

Medical Evidence in Motoring Cases

Sir WILLIAM DAVISON asked the Home Secretary whether he would hold an inquiry into the methods used in connexion with the payment of medical men employed to give evidence in certain motoring cases where drivers were charged with being drunk in charge of a motor-car, and, in particular, as to whether the medical man was informed that he would be paid a larger fee if a conviction was obtained.—Mr. PEAKE replied: It would clearly be improper to make the amount of the fee payable in such cases in any way dependent upon the result of any subsequent legal proceedings. If my hon. friend will furnish me with particulars of any cases in which it is suggested that this practice has been followed, inquiries will certainly be made.

TUESDAY, JUNE 13

University Students and Military Service

Mr. KENNEDY asked the Minister of Labour if he had now reached a decision regarding the position of undergraduates at Scottish universities and colleges affected by the Military Training Act; and if he could give an assurance that there would be no interruption of degree examinations or the students' preparatory work.—Mr. W. S. MORRISON, Chancellor of the Duchy of Lancaster, replied: Undergraduates now at universities or university colleges in Scotland as well as in England and Wales and those who will be entering universities as full-time students this autumn will be permitted, if they so desire, to postpone their liability to be called up for military training until the conclusion of their course of study as approved by the university.

Mr. ROBERT GIBSON asked the Minister of Labour if he had now reached a decision on the point relative to postponement in the case of undergraduates who had signed the register of conscientious objectors so as to put such undergraduates on the same footing as those who had signed the military-training register; and if he would make a statement on the subject.—Mr. W. S. MORRISON replied: The Military Training Regulations, 1939, provide that an application to a local tribunal by a person who has been provisionally registered in the register of conscientious objectors shall be made within fourteen days of the date on which he was so provisionally registered, or within such other period as the Minister may in any particular case for special reasons allow. My right hon. friend proposes under the power given by these regulations to allow a university undergraduate who has provisionally registered as a conscientious objector to make his application to the local tribunal within a period ending not later than one month after the conclusion of his course of study as approved by the university. Any such undergraduate will be required to obtain annually from the proper university authority a statement that he is a full-time member of the university, and giving the date on which his approved course of study is due to terminate. This will place an undergraduate who is a conscientious objector in the same position in this respect as an undergraduate on the military-training register.

Medical Examination of Militiamen

Mr. HEPWORTH asked the Minister of Labour whether the medical examination of military trainees was to be different from that on the occasion of the last war; whether it was to be conducted by five doctors, each examining some part of the trainee's anatomy, instead of one doctor making the entire examination; and whether the chairman was to examine at all, or only to base his final recommendation upon the report of the other medical men.—Mr. ERNEST BROWN replied: The medical examination of militiamen will be conducted by a board consisting normally of five doctors, one of whom will act as chairman. Each of the four members will separately carry out certain specified parts of the examination and will recommend the appropriate medical grade in respect of his part of the examination. The chairman will see each man stripped and will consider the recommendations, but will not re-examine each man unless there is a doubtful condition which may affect the grading. In this case he will himself make an examination and consult with the members of the board.

Mr. DE LA BERE asked the Minister of Labour whether he would consider making an intensive examination of militiamen at one or two selected Army depôts with a view to eliminating the nervously unstable youth who would be liable to suffer from shell-shock in the event of emergency.—Mr. HORE-BELISHA, Secretary of State for War, replied: In view of the fact that the medical examination carried out under section 4 of the Military Training Act is specially designed to prevent men who are unfit for military training owing to nervous instability from entering the militia, it is considered that a subsequent medical examination in this connexion is not necessary.

The Medicine Stamp Duties

Mr. HANNAH asked the Chancellor of the Exchequer what steps he proposed to allay the grave apprehension among pharmacists at the proposed repeal of the medicine stamp duties as depriving them of an ancient right to be the only retailers of their own preparations unstamped, with a due sense of responsibility.—Sir J. SIMON replied: I do not consider that the repeal of the medicine stamp duties need have the effect which my hon. friend fears. It will be open to pharmacists who are at present the only retailers of their own preparations unstamped to continue this practice if they desire to restrict the channels of sale in this way; but repeal of the duties will remove the anomaly by which at present the same preparation may be sold unstamped by chemists but must be stamped when sold by traders who are not chemists.

Sir W. DAVISON asked if it would not be a safeguard to the public that these patent medicines should be sold through chemists who knew the ingredients and would not sell them if they were actively detrimental.—Sir J. SIMON: In some cases a chemist knows the ingredients and in some cases he does not.

Mr. R. C. MORRISON asked if the right hon. gentleman was aware that the shares of Beechams Pills went up on the repeal of the acts.

No further reply was given.

THE LANCET 100 YEARS AGO

June 15, 1839, *p.* 425.

From a clinical lecture on lateral curvature of the spine by Mr. Frederick Hale Thomson.

The amount of exercise, or rather the extent to which the *want of exercise* is carried in many boarding-schools, will appear incredible to those who have not personally investigated the subject. The following is the *carte* of a young ladies' boarding-school, drawn up on the spot, a few years since, from the report of several of its inmates:—

At 6 in the morning the girls are called, and rise; from 6 to 8, learning or saying lessons in school; 8 to 8½, at breakfast; 8½ to 9, preparing lessons out of school, some of the girls permitted to do so in the garden; 9 to 1, at various tasks in school; 1 to 1½, out of school, but must not go out of doors; reading or working and preparing for dinner; 1½ to 2, at dinner; 2 to 5, in school, various tasks; 5 to 5½, tea; 5½ to 6, preparing to go out; dressing or reading, or playing in school; 6 to 7, walk, generally arm-in-arm, on the high road, many with their books in their hands, and reading.

Two days in the week they do not walk in the evening at all, being kept in for dancing. . . . It is to be remarked that they never go out unless the weather is quite fine at the particular hours allotted for walking. They go to church . . . twice every Sunday, on which day no other exercise is taken.

MEDICAL NEWS

University of Cambridge

Mr. J. B. Hunter and Dr. E. C. Lindsay have been appointed additional examiners in surgery for part I of the final M.B. examination to be held in June, 1939. Dr. W. J. Turrell has also been appointed substitute examiner for the diploma of medical radiology and electrology for 1939 in place of the late Dr. E. P. Cumberbatch.

University of Sheffield

Dr. R. W. John has been appointed hon. demonstrator in pathology in the university.

University of Wales

At recent examinations the following candidates were successful in obtaining the tuberculous diseases diploma :—

H. R. Ackermann, V. N. Ananda Theertha, B. K. Banerjee, R. N. Chaudhuri, Elizabeth M. R. Clarke, S. K. Das Gupta, M. D. Deshmukh, M. A. J. Faridi, N. V. Gokhale, A. C. Guha, E. A. M. Halsted, R. M. Patel, R. F. Peters, M. U. Rao, Pasupulate Ramakrishna, and D. D. Verma.

Queen's University, Kingston

Dr. E. M. Robertson has been appointed professor of obstetrics and gynæcology in Queen's University, Kingston, Ontario, and head of the obstetric and gynæcological services of Kingston General Hospital. Dr. Robertson is a lecturer in clinical midwifery in the University of Edinburgh and junior assistant gynæcologist to the Royal Infirmary.

Oxford Graduates' Medical Club

The summer dinner of this society will be held at Exeter College, Oxford, on Friday, June 23, at 7.30 P.M. Lord Nuffield will be in the chair. Further particulars may be had from Mr. E. A. Crook, the hon. secretary, 99, Harley Street, London, W.1.

Lady Tata Memorial Grants and Scholarships

The trustees of the Lady Tata memorial fund have awarded the following grants and scholarship for research in blood diseases with special reference to leukæmia :—

Grants for research expenses.—Dr. Jørgen Bichel (Aarhus, Denmark), Dr. Julius Engelbreth-Holm (Copenhagen), Dr. M. P. J. Guérin (Paris), Prof. Karl Jármai (Budapest), Prof. James McIntosh (London), Prof. Eugene L. Opie and Dr. Jacob Furth (New York), and Dr. Joachim Wienbeck (Breslau).

Part-time personal grant and grant for research expenses.—Dr. Werner Jacobson (Cambridge).

Whole-time scholarship.—Dr. Edoardo Storti (Pavia, Italy).

Park Hospital for Functional Nervous Disorders, Oxford

On June 1 Sir Farquhar Buzzard, regius professor of medicine of the University of Oxford, opened this hospital which has accommodation for the treatment of 26 patients of both sexes suffering from functional nervous disorders. No provision has hitherto existed in Oxford and district for the inpatient treatment of psychoneuroses.

Sir Farquhar Buzzard said that the last fifty years had seen a remarkable development in the science of medicine, particularly psychological medicine. It was now recognised that active psychological treatment could be of enormous value in a large number of cases of functional nervous disorder. The development which had been most delayed was that of providing a sufficient number of beds where patients could receive special skilful treatment of an active kind in surroundings away from their homes. For poorer people particularly there were very few institutions of that kind in the country. He thought they could say they were developing that day the kind of hospital which was so much wanted and which was going to be unique in this district.

The hospital, formerly known as Highfield Park House, is owned by the authorities of the Warneford Hospital and will be administered as a separate unit. The new hospital is not under the Lunacy or Mental Treatment Acts, however, and will be run on similar lines to those of a general hospital or nursing-home. No formalities regarding admission will be required. The fees are described as moderate and special concessions are being made to a limited number of cases from the neurological clinic of the Radcliffe Infirmary. Dr. R. G. McInnes has been appointed medical director.

Royal College of Surgeons of England

At a meeting of the council of the college held on June 8 with Mr. Hugh Lett, the president, in the chair, Mr. Seymour Barling was admitted as a member of the court of examiners, Mr. Ernest Hey Groves was appointed to give a Moynihan lecture this year, and the John Tomes prize for 1936–38 was awarded to Mr. Arthur Bulleid for his researches into the bacteriology of the mouth. Mr. W. Sampson Handley was reappointed as the representative of the college on the court of governors of the University of Sheffield, and Sir James Walton was appointed the representative on the managing committee of the Schiff Home of Recovery.

Diplomas of fellowship were granted to the following candidates :—

E. R. Smith, M.B. Lond., St. Thos.; E. H. C. Harper, M.B. Lond., St. Thos.; A. B. King, M.B. Lond., Univ. Coll.; G. W. Blomfield, M.B. Leeds, St. Bart's; H. G. Hanley, M.B. Lpool, Guy's; C. C. Jeffery, L.R.C.P., London Hosp.; H. C. Hugh, M.B. Lond., St. Bart's; F. G. St. C. Strange, L.R.C.P., London Hosp.; B. M. Truscott, M.B. Lond., Middlesex; Venkiteswariyer Sankarambal, L.R.C.P., Roy. Free and Guy's; F. A. Simmonds, M.B. Camb., St. Thos.; F. G. Ward, B.M. Oxfd, St. Bart's; Eugénie L. Willis, M.B. Camb., Roy. Free; L. R. Leask, M.B. Lond., St. Bart's; G. C. L. Pile, M.B. Camb., Middlesex and Guy's; E. G. Tuckwell, B.M. Oxfd, St. Bart's; Arnold Gourevitch, L.R.C.P., Birm. and St. Thos.; J. S. Ellis, M.B. Camb., St. Thos.; J. M. Small, M.B. Birm., St. Bart's; T. J. Fairbank, M.B. Camb., St. Thos.; C. G. Rob, M.B. Camb., St. Thos.; D. M. Wallace, M.B. Lond., Univ. Coll.; A. E. Dreosti, M.B. Cape Town, Guy's and St. Bart's; A. H. Barber, M.B. Birm., London Hosp.; J. M. P. Clark, M.B. Leeds, St. Thos.; C. M. Gardner, M.D. McGill, St. Bart's; A. J. Innes, M.B. Edin., Guy's; D. F. Lawson, M.B. Melb., Guy's; T. M. Pemberton, M.B. N.Z.; D. G. Phillips, M.B. N.Z., St. Bart's; P. W. S. Riley, M.B. N.Z., St. Thos.; Arnold Rose, M.B. Dub., Birm.; K. R. Thomas, M.B. N.Z., Guy's; E. B. H. Trehair, M.B. Witwatersrand, London Hosp.; A. K. Tulloch, M.B. N.Z., St. Thos.; and A. S. A. Zikry, M.B. Cairo, St. Thos.

Diplomas of membership were granted to P. H. Davison (Birmingham) and E. P. de Silva (Ceylon and West London); diplomas in anæsthetics were granted, jointly with the Royal College of Physicians, to the following candidates :—

B. J. E. Anson, Harigopal Barat, D. J. T. Brinkworth, J. C. Constable, D. G. Cracknell, James Crawford, F. W. Crook, D. A. A. Davis, M. S. El Hakeen, G. E. Ennis, W. E. F. Evans, S. M. Geffen, R. P. Harbord, J. N. H. Howell, T. B. Kenderdine, D. A. Knight, B. G. B. Lucas, J. J. McEnery, R. R. Macintosh, Lucy G. MacMahon, Audrey Marsden, James Montgomerie, Kathleen O'Donnell, W. E. Owens, H. E. Pooler, Freda B. Pratt, Margaret S. Riddell, Shelagh M. Streatfeild, B. I. Taft, N. G. G. Talbot, S. G. Talwalkar, A. M. Williams, L. J. Wolfson, and R. L. Wynne.

The following examiners were appointed for the ensuing year :—

Dental Surgery.—Surgical section: Mr. C. P. G. Wakeley, Mr. E. G. Slesinger, Mr. Reginald M. Vick, Mr. Basil Hume, Mr. L. E. C. Norbury, and Mr. A. C. MacLeod.

Primary Fellowship.—Anatomy: Prof. Ronald Bramble Green, Mr. E. P. Stibbe, Prof. F. Wood Jones, F.R.S., and Mr. A. M. A. Moore. Physiology: Prof. John Mellanby, F.R.S., Prof. D. T. Harris, Prof. A. St. G. J. Huggett, and Prof. H. P. Gilding.

Diploma of L.R.C.P., M.R.C.S.—Elementary biology: Mr. A. E. Ellis, Mr. S. R. B. Pask, Mr. Wilfrid Rushton, D.Sc., and Dr. Evan Idris Jones. Anatomy: Dr. A. J. E. Cave, Prof. W. J. Hamilton, and Prof. A. B. Appleton. Physiology: Prof. D. T. Harris and Prof. Hamilton Hartridge, F.R.S. Midwifery: Mr. Trevor Davies, Mr. J. St. G. Wilson, Mr. Leslie Williams, and Mr. G. F. Gibberd. Pathology: Dr. W. G. Barnard, Mr. B. W. Williams, Mr. D. H. Patey, and Prof. W. D. Newcomb.

Diploma in Public Health.—Part I: Major-General H. M. J. Perry. Part II: Dr. Charles Porter.

Diploma in Tropical Medicine and Hygiene.—Lieut.-General Sir William MacArthur and Dr. Hamilton Fairley.

Diploma in Ophthalmic Medicine and Surgery.—Part I: Mr. Leighton Davies and Mr. Affleck Greeves. Part II: Mr. Adrian Caddy.

Diploma in Psychological Medicine.—Prof. F. L. Golla.

Diploma in Laryngology and Otology.—Part I: Mr. N. A. Jory and Mr. Terence Cawthorne. Part II: Mr. Edward Carew-Shaw.

Diploma in Medical Radiology.—Part I: Dr. H. T. Flint. Part II: Dr. Hugh Davies.

Diploma in Anæsthetics.—Dr. A. S. Daly.

Diploma in Child Health.—Dr. A. G. Maitland-Jones.

The temporary recognition granted to the following hospitals for the six months' surgical practice required of candidates for the final fellowship examination was confirmed: Harrogate District and General Hospital

(house-surgeon); Warneford, Leamington and South Warwickshire General Hospital (resident house-surgeon). Recognition was also granted to the Radcliffe Infirmary and County Hospital, Oxford, for the posts of resident surgical officer (while acting as house-surgeon) and three general house-surgeons.

Papworth Village Settlement

The Duke of Kent will preside at the annual meeting of the settlement at the Park Lane Hotel, Piccadilly, London, W.1, on Friday, June 30, at 3.15 P.M. The speakers will include Prof. John Hilton and Sir Pendrill Varrier-Jones, F.R.C.P.

Emergency Ambulance Service

Of the 151 scheme-making authorities under the Air Raid Precautions Act 100 have now submitted to the Minister of Health their proposals for an emergency ambulance service to pick up casualties other than walking wounded and take them to hospitals or depôts. The schemes proposed, of which 42 have been approved, show where the ambulances will be stationed and how the vehicles and drivers and attendants will be allocated between the several posts, and they provide for coöperation with neighbouring authorities. In general, ambulance posts and stretcher-party depôts are identical or close to each other, both services coming under the control of the medical officer of health. The vehicles used will be mainly adapted small vans of the commercial type. Simple stretcher-carrying fitments have been designed which the authorities will store in central depôts. The Department of Health for Scotland has lately issued a circular (D.P., No. 24) describing such fitments and recommending that their assembly should be part of the training of ambulance personnel.

Harveian Society of London

The annual Buckston Browne banquet was held at the Connaught Rooms on June 8, the official day of celebrating the King's birthday, and a cablegram was sent expressing the society's loyal devotion. Two recipients of birthday honours were present in the person of Surgeon Vice-Admiral P. T. Nicholls and Air Vice-Marshal A. V. J. Richardson. Sir Buckston Browne was present as a quiet spectator of the good fellowship for which he was responsible. Dr. A. D. Morris, medical superintendent of St. Leonard's Hospital, who was in the chair, had as personal guests two other distinguished members of the L.C.C. medical service, Sir Frederick Menzies and Dr. H. W. Bruce. Mr. Justice Humphreys, proposing the toast of The Society, recalled its foundation under the name of the Western London Medical Society and suggested that "as the society wouldn't go with that name," it was decided to associate the name of William Harvey, about whom he was expecting to hear something. As a lawyer Sir Travers was glad to observe the name of Dr. Marshall Hall among its founders. Societies of this kind were, he thought, of value not merely for acquiring knowledge but for giving opportunity to a scattered membership to meet each other. They began in 1856, he noted, to dine together. Dr. Morris, in his reply, explained that Mr. Tudor Edwards had delivered his Harveian lecture on bronchiectasis earlier in the day. He told the members of a scheme for providing a permanent home for the society. He did not name the sum asked for; had it not been for the energy of their treasurer, Mr. Cecil Wakeley, he would have been appalled at its amount Dr. H. L. Glyn Hughes proposed The Visitors, coupled with the names of the Cardinal Archbishop of Westminster and Mr. G. D. Roberts, K.C., recorder of Exeter. In reply, Cardinal Hinsley spoke of the relation between his own work as a healer of the mind and that of the medical profession as healers of the body. Mr. Roberts also concluded his remarks with an allusion to the relief of human suffering. There were present in all 240 members and friends, and besides those mentioned the guests included the presidents of the Royal College of Surgeons, the British College of Obstetricians and Gynæcologists, the Royal Society of Medicine, the Medical Society of London, the Hunterian Society and the Chelsea Clinical Society, and the masters of the Society of Apothecaries and of the Barbers Company.

University of Glasgow

On June 20, at 4.15 P.M., Prof. Grey Turner will deliver the fifth Macewen lecture in the university. He will speak on the Macewen outlook in surgery.

Prof. J. W. Cook, F.R.S., has been appointed to the chair of chemistry in the university in succession to the late Prof. George Barger. Prof. Cook holds a chair of chemistry in the University of London and is research chemist to the Royal Cancer Hospital (Free), where he has made important observations on natural and synthetic carcinogenic and œstrogenic substances.

St. Bartholomew's Hospital, London

The gardens on the roof of Derry and Toms's building, adjoining Kensington High Street station, will be open from Monday, June 19, to Saturday, June 24, on behalf of the hospital. Nurses will be in attendance to receive donations of 1*s.* and upward.

West London Medico-Chirurgical Society

The fifty-seventh annual dinner of this society will be held at the Trocadero Restaurant, London, W.1, on July 5 at 8 P.M. The guests will include Sir Robert Hutchison, P.R.C.P., Mr. Hugh Lett, P.R.C.S., the medical director-general of the Royal Navy, the director-general of Army Medical Services, and the director of medical services of the Royal Air Force. Further information may be had from the hon. secretary, 34, Devonshire Place, W.1.

A Voluntary Hospital

The 111th anniversary of the Royal Sussex County Hospital, Brighton, on June 9, was the occasion of the inauguration of a mechanical respirator, the gift of Lord Nuffield, which was formally handed over by Prof. R. R. Macintosh, and the establishment of the Mayo fellowship in anæsthetics. Dr. Donald Hall, chairman of the governors, presided, and his supporters included Lord Horder, who said the hospital seemed to him one of the best arguments for the continuance of the voluntary system. As a pragmatist, he judged principles and institutions by the question, "Do they work?" Not only did this hospital work but it was an exciting and living example of democracy throughout its long life. It was the result of a voluntary association of citizens and experts for their mutual protection against disease, and for raising the standard of the common health—which was even better than the common wealth. If that hospital were the result of some other state's four-, or five-, or ten-year plan, they would be having relays of visitors from neighbouring states, with guides and interpreters, showing it off as a product of some incomparable system. But as the institution was merely the normal product of intelligence, of civic sense, and of enlightened self-interest in an undramatically functioning democracy, it was left to people like himself to declare its merits.

International Neurological Congress at Copenhagen

The congress will meet at the Rigsdag, Christiansborg Castle, on Monday, Aug. 21, and on the following Tuesday, Thursday, and Friday. The subjects for the three main sessions will be: the endocrine-vegetative system; the heredo-familial diseases; and the vitamin deficiencies. Papers on other subjects will be read at the Thursday session, when there will be a special section of neurosurgery, and on Wednesday excursions will be arranged to Frederiksborg Castle, Hillerød and Kronborg Castle at Elsinore. The rapporteurs include Sir Henry Dale, F.R.S., Sir Edward Mellanby, F.R.S., and Dr. C. C. Ungley.

Active membership is open to all neurologists, neurosurgeons, psychiatrists, and other medical men and women interested in neurology. Application must be made through one of the national committees—in this country through Dr. Critchley at 137, Harley Street, W.1. Non-professional men and women are eligible for associate membership. The subscription is a guinea for members and half a guinea for associates. The congress is being held at the height of the tourist season in Copenhagen so that early application for hotel accommodation is advisable. Bookings can only be made through a branch of the American Express Company.

Tuberculosis Scholarship

The Royal College of Physicians of London propose to appoint an assistant part-time scholar to coöperate in the work of the Prophit tuberculosis survey. Further particulars will be found in our advertisement columns.

National Union of Students

The third annual conference of representatives of medical student societies will be held in Leeds from July 11 to 14. The general subject for discussion will be the prospect for the newly qualified doctor. The speakers will be Prof. W. MacAdam, Dr. W. S. Macdonald, Prof. E. J. Wayne, Dr. R. Sutherland, and Lieut.-Colonel R. B. Price. Further information may be had from the secretary, 3, Endsleigh Street, London, W.C.1.

Cancer Prize

The first award from the Anna Fuller fund of New Haven, Connecticut, has been made to Prof. Ernest Kennaway, F.R.S., Prof. J. W. Cook, F.R.S., Mr. C. L. Hewett, Ph.D., Mr. I. Hieger, Ph.D., and Mr. William Mayneord, D.Sc., who are all workers in the research department of the Royal Cancer Hospital (Free), London. The prize, which is worth about £1500, is awarded for a "real and outstanding contribution to knowledge on the subject of the cause, care, prevention or cure of cancer."

Medical Diary

June 19 *to June* 25

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole Street, W.1.
THURSDAY.
Dermatology. 4 P.M., Dr. S. Berhman and Dr. L. Forman: (1) Dermatomyositis. Dr. A. D. K. Peters: (2) Striæ Atrophicæ, 1 Cushing's Syndrome. Dr. F. Parkes Weber: (3) Persistent Red Patches in Axillæ.

MEDICO-LEGAL SOCIETY.
THURSDAY.—8.30 P.M., Dr. Denis Carroll: The Psychiatric Treatment of Delinquents.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

TAVISTOCK CLINIC, Malet Place, W.C.1.
MONDAY.—6 P.M., Dr. Emanuel Miller: Manifestation of the Early Psychoses in Children (I).
WEDNESDAY.—3 P.M., Dr. Cedric Shaw: summary. 4.30 P.M., Dr. H. Crichton-Miller: summary.
THURSDAY.—Dr. Alan Maberly: Disorders of Childhood—Sex Offences.

ST. MARY'S HOSPITAL, W.2.
TUESDAY.—5 P.M. (institute of pathology and research), Prof. Wilfred Trotter, F.R.S.: Has the Intellect a Function?

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12.
MONDAY.—4.30 P.M., Dr. R. C. Wingfield: Pulmonary Tuberculosis.
WEDNESDAY.—Noon, clinical and pathological conference (medical). 2 P.M., Prof. J. H. Dible: Pathology of the Gastro-intestinal Tract (II). 3 P.M., clinical and pathological conference (surgical). 4.30 P.M., Prof. H. W. C. Vines: Pathology of the Adrenal Glands.
THURSDAY.—2.15 P.M., Dr. Duncan White: radiological demonstration. 3.30 P.M., Dr. Helena Wright: Birth Control.
FRIDAY.—2 P.M., clinical and pathological conference (obstetrics and gynæcology). 2.30 P.M., Mr. J. B. Hume: Hernia and its Treatment.
Daily, 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynæcological clinics and operations.

HOSPITAL FOR SICK CHILDREN, Great Ormond Street, W.C.1.
THURSDAY.—2 P.M., Mr. James Crooks: The Causes, Recognition, and Treatment of Deafness in Childhood. 3 P.M., Dr. E. A. Cockayne: The Von Gierke, Niemann-Pick, Gaucher, and Schüller-Christian Syndromes.
Outpatient clinics daily at 10 A.M. and ward visits at 2 P.M.

ST. GEORGE'S HOSPITAL, S.W.1.
THURSDAY.—5 P.M., Dr. W. S. Maclay: psychiatric demonstration.

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES, W.9.
THURSDAY.—3 P.M., Prof. F. L. Golla: clinical demonstration.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole Street, W.1.
MONDAY to SUNDAY.—BROMPTON HOSPITAL, S.W.3, Tues. and Fri. or Mon. and Thurs., 5.15 P.M., M.R.C.P. courses in chest diseases.—LONDON CHEST HOSPITAL, Victoria Park, E.2, Wed. and Fri., 6 P.M., M.R.C.P. course in heart and lung diseases.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck Street, W.1, afternoon M.R.C.P. course in neurology.—CHELSEA HOSPITAL FOR WOMEN, Arthur Street, S.W.3, all-day course in gynæcology.—PRESTON HALL, near Maidstone, Kent, Sat., all-day demonstration on pulmonary tuberculosis.—PRINCESS ELIZABETH OF YORK HOSPITAL, Shadwell, E.1, Sat. and Sun., all-day course in children's diseases.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.
WEDNESDAY.—3 P.M., visit to British Legion Village, Preston Hall, Maidstone, Kent.

HONYMAN-GILLESPIE LECTURE, Edinburgh.
THURSDAY.—4.30 P.M. (Royal Infirmary), Mr. C. F. W. Illingworth: Recent Developments in the Surgical Treatment of Obstructive Jaundice.

GLASGOW UNIVERSITY.
TUESDAY.—4.15 P.M., Prof. G. Grey Turner: The Macewen Outlook in Surgery. (Macewen lecture.)

Appointments

ALLISON, A. MAXWELL, L.R.C.P.E., assistant medical officer, Exeter City Mental Hospital.
BARBOUR, W. J., M.D. Glasg., D.P.M., medical superintendent at the Borough Mental Hospital, Derby.
†BORG, CHARLES, M.D. Malta, resident medical officer at Richmond Infirmary, Surrey.
COLLIS, J. L., M.B. Birm., F.R.C.S., resident surgical officer at the General Hospital, Birmingham.
*DAVIES, J. R., M.R.C.S., D.T.M. & H., assistant port medical officer of health for the City of London.
EPSTEIN, EDWARD, M.B. Witwatersrand, clinical assistant in the ophthalmic department of Sheffield Royal Infirmary.
EVANS, A. B., M.B. Camb., F.R.C.S., chief obstetric assistant and registrar to the Westminster Hospital.
FORGACS, PAUL, M.B. Lond., assistant resident medical officer at the City Isolation Hospital, Plymouth.
GRANT, J. K., M.B. Aberd., medical superintendent at the Renfrew District Asylum, Dykebar.
HEALY, TIMOTHY, L.R.C.P.I., D.P.H., assistant resident medical officer at the North Wales Sanatorium, Llangwyfan.
KEELING, R. G. M., M.B. Camb., resident medical officer at the Hospital for Women, Soho.
LAWRENCE, J. S., M.D. Edin., clinical assistant in the dermatological department of the Sheffield Royal Infirmary.
MACDONALD, N. M., M.B. Glasg., D.P.H., senior school medical officer and deputy medical officer of health for Rotherham.
MAIR, G. B., M.D. Glasg., F.R.C.S.E., senior resident surgical officer at Warneford General Hospital, Leamington Spa.
*MORTON, WILLIAM, M.D. Glasg., deputy medical superintendent at Withington Hospital, Manchester.
ROBERTSON, P. A. M., L.R.C.P.E., junior assistant medical officer at Park Prewett Mental Hospital, Basingstoke.
RUSSELL, JOHN, M.B. Glasg., D.P.M., medical superintendent, Exeter City Mental Hospital.
*SAUNSBURY, EDWARD, M.B. Manc., resident assistant medical officer at Withington Hospital, Manchester.
SINCLAIR, MOLLY K., hon. instructor for speech defects to St. Bartholomew's Hospital, London.
WALTON, L. H. F., M.R.C.S., hon. consulting physiotherapist to the department of physical medicine of the Hertford County Hospital.
*WISHART, G. N. M., M.R.C.S., D.P.H., assistant port medical officer of health for the City of London.
WOOLMER, R. F., B.M. Oxfd, D.A., hon. chief anæsthetic assistant and registrar.
WRIGHT, S. L., M.D. Lond., M.R.C.P., D.P.H., deputy medical officer of health for Wembley.

Dufferin Association.—The following appointments have been made to the Women's Medical Service for India:—
BROWN, DORIS B., M.D. Leeds, F.R.C.S., M.R.C.O.G.;
CATCHATOOR, M., M.B. Punjab;
LONG, HILARY, M.B. Lond., F.R.C.S.;
MUNDLE, Dr., M.B. Punjab, D.C.H.;
NAIDU, Dr., M.B. Punjab, D.T.M. & H., M.M.S.A.; and
VETHAVANAN, D. C. R., M.B. Madras, M.R.C.P., D.R.C.O.G.

Hospital for Sick Children, Great Ormond Street, London:—
ALLIBONE, E. C., M.D. Leeds, M.R.C.P., resident medica assistant and clinical pathologist;
MILLER, H. G., M.B. Durh., house-physician;
PIERCE, J. W., M.B. Lond., M.R.C.P., house-physician; and
THOMSON, D. M., M.D. Manitoba, M.R.C.S., house-surgeon.

Colonial Medical Service.—The following appointments are announced:—
CALDWELL, J. McC., M.B. Dubl., medical officer, Uganda;
GARROD, J. M. B., M.B. Belf., medical officer, Northern Rhodesia;
GEORGE, C. R., M.B. Glasg., medical officer, Northern Rhodesia;
LAURIE, J. I. H., M.B., medical officer, Cyprus;
MOLESWORTH, B. D., M.B. Camb., medical officer, Malaya;
ROGAN, J. M., M.B. Edin., M.R.C.P.E., medical officer, Malaya;
JOBSON, E. W. C., M.B. Edin., senior medical officer, Tanganyika Territory;
MACDONALD, J. F., M.B. Edin., F.R.C.S.E., surgical specialist, Northern Rhodesia;
MCGREGOR, J. A., M.B. Glasg., D.P.H., D.T.M., senior medical officer, Northern Rhodesia; and
ROBINSON, P. B., M.B. Dubl., D.P.H., D.T.M., senior medical officer, Northern Rhodesia.

Examining Surgeons under the Factories Act, 1937: Dr. E. VINING (Littleborough District, Lancashire).

* Subject to confirmation.
† This appointment was given incorrectly in our issue of June 3.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Surgeon in charge of radium therapy, £800.
Army Dental Corps.—Commissions.
Ashton-under-Lyne District Infirmary.—H.S., at rate of £150.
Barbados General Hosp.—Radiologist, £800. Also H.S. and anæsthetist, £450.
Battersea Borough Council.—Deputy M.O.H. and tuberculosis officer, £825.
Bedfordshire County Council.—Asst. M.O.H., maternity and child welfare, £500.
Birmingham City.—Asst. res. M.O. in tuberculosis section, £450. Also jun. asst. M.O. for Rubery Hill and Hollymoor Divisions, £350.
Blackburn Royal Infirmary.—Res. H.S., £175.
Bradford, Infectious Diseases Hosps.—Med. supt., £850.
Bradford Royal Infirmary.—Res. M.O. and asst. pathologist, £250. Res. surg. O., £250. Also H.P. to radium and skin depts., at rate of £200.
Brighton County Borough.—Sen. M.O. and asst. to M.O.H., £800. Also A.M.O. for civil defence, £500.
Bristol General Hosp.—Cas. H.S., at rate of £100. Two H.P.'s, three H.S.'s, res. obstet. officer, and H.S. to spec. depts., each at rate of £80.
*British Hosp. for Functional, Mental and Nervous Disorders, 72, Camden Road, N.W.*1.—Hon. physician.
*British Postgraduate Medical School, Ducane Road, W.*12.—H.S. to surgical unit, at rate of £105.
Canterbury, Kent and Canterbury Hosp.—H.S. to special depts., at rate of £125.
Cardiff Royal Infirmary.—Radium registrar, £400. Also Hon. physician.
*Cecile Booysen Clinic, 39, Spencer Street, E.C.*1.—M.O.'s, each 1½ guineas per session.
*Chelsea Hosp. for Women, S.W.*3.—Anæsthetist, 30 gns.
Colchester, Essex County Hosp.—H.S., £175.
Derbyshire County Council.—Asst. county M.O.H., £750.
Derbyshire Education Committee.—Asst. school M.O., £500.
Dewsbury County Borough.—Res. asst. M.O. in maternity and child welfare dept., £350.
Durham County Council.—Res. med. supt. for School Aycliffe Colony, £800. Also asst. school M.O., £500.
*Elizabeth Garrett Anderson Hosp., Euston Road, N.W.*1.—Hon. first asst. to obstetric dept. Also H.P., first, second and third H.S., and obstetric asst., each at rate of £50.
Gloucester, Barnwood House Hosp. for Mental and Nervous Disorders.—Second asst. M.O., £450.
*Golden Square Throat, Nose and Ear Hosp., W.*1.—Clin. asst.
Hastings, Royal East Sussex Hosp.—Jun. H.S., at rate of £150.
*Hosp. of St. John and St. Elizabeth, 60, Grove End Road, N.W.*8.—Res. H.P., at rate of £100.
*Hosp. for Tropical Diseases, 25, Gordon Street, W.C.*1.—Three H.P.'s, each at rate of £120. Also ophthalmic surgeon.
Hull, Beverley Road Institution.—Asst. M.O., £350.
Hull Municipal Maternity Home and Infants' Hosp.—Jun. res. M.O., at rate of £100.
Hull Royal Infirmary.—Hon. gynæcologist.
Ilford, King George Hosp.—Med. reg., £150. Also asst. cas. O. and H.S. to spec. depts., at rate of £100.
Lancashire County Council.—Asst. county M.O., £800.
Leigh Infirmary, Lancs.—Jun. H.S., at rate of £150.
Lincoln City.—Res. M.O. for City Hosp. and Sanatorium, £300.
Lincolnshire Joint Board for the Mentally Defective.—Asst. M.O., £400.
Liverpool, Alder Hey Hosp.—Res. asst. M.O.'s, each at rate of £200.
Liverpool City.—Res. asst. M.O.'s for Walton Hosp., Smithdown Road Hosp., and Mill Road Infirmary, each £200.
Liverpool Hosp. for Consumption and Diseases of the Chest, Mount Pleasant.—Res. M.O., £150.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. to med. supt., £225.
London County Council.—Asst. M.O.'s (class I), each £350. Asst. M.O.'s (class II), each £250. Also part-time M.O. for Ongar residential school, at rate of £130.
*London Hosp., E.*1.—Medical first asst. and registrar, £300. Also Medical outpatient first asst., £150.
Manchester Royal Children's Hosp., Pendlebury.—Res. H.S., at rate of £100.
Manchester Royal Infirmary.—Radiologist for X-ray diagnostic work, £1000.
Middlesex County Council.—Appointments, £650 to 3 guineas a week.
Montrose Royal Asylum.—Third asst. M.O., £300.
*Nelson Hosp., Merton, S.W.*20.—Res. H.S., at rate of £150.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Jun. surg. reg., £150. Also res. appointments, at rate of £200 to £50.
Newcastle-on-Tyne Throat, Nose and Ear Hosp.—H.S., £150.
Norwich, Norfolk and Norwich Hosp.—H.P. and H.S., each £120.
Oxford, Radcliffe Infirmary.—Hon. asst. obstetrician and gynæcologist. Also hon. asst. surgeon to ear, nose and throat dept.
Oxford, Wingfield-Morris Orthopædic Hosp.—Lord Nuffield scholarship in orthopædic surgery, £200. Also res. H.S., at rate of £100 to £120.
Plymouth, Prince of Wales's Hosp., Greenbank Road.—Res. surg. O., at rate of £225.
*Princess Elizabeth of York Hosp. for Children, Shadwell, E.*1.—Cas. O., at rate of £125.
*Radium Institute and Mount Vernon Hosp., 1, Riding House Street, W.*1.—H.S. for Mount Vernon Hosp., at rate of £150.
Reading, Royal Berkshire Hosp.—Hon. asst. anæsthetist.
Rochdale Infirmary and Dispensary.—Sen. H.S., £200.
Rotherham, Municipal General Hosp.—Jun. asst. res. M.O., £180.
Rotherham Hosp.—Cas. H.S., £150.
Royal Army Medical Corps.—Temporary commissions.
*Royal Chest Hosp., City Road, E.C.*1.—H.P., at rate of £100.
*Royal College of Physicians, Pall Mall East, S.W.*1.—Asst. Prophit scholar, £250.
*Royal London Ophthalmic Hosp., City Road, E.C.*1.—Pathologist and curator, £650. Also Outpatient officer, £150.
Royal Naval Medical Service.—Medical officers.
*St. John's Hosp., Lewisham, S.E.*13.—Res. cas. O. and res. second H.S., each at rate of £100.
*St. Mark's Hosp. for Cancer, &c., City Road, E.C.*1.—H.S., at rate of £120.
*St. Mary's Hosp. for Women and Children, Plaistow, E.*13.—Res. H.P., at rate of £150.
*St. Thomas's Hosp., S.E.*1.—Hon. neuro-surgeon.
Salford City.—Asst. M.O. for V.D. treatment centre, £500.
Sheffield Children's Hosp.—H.P., £100.
Sheffield Royal Infirmary and Hosp., Dept. of Radiology.—First asst., £500. Also clin. asst., £300.
Stamford, Rutland and General Infirmary.—H.S., at rate of £250.
Sunderland Royal Infirmary.—Cas. O. and H.S. to ear, nose and throat dept., at rate of £120.
Thorp Arch, Yorks, Marguerite Hepton Orthopædic Hosp.—Med. supt., £700.
*University College Hosp. Medical School, W.C.*1.—Radcliffe Crocker travelling scholarship in dermatology, £280.
Wakefield, Wadsley Mental Hosp.—Asst. M.O., £350.
Walsall General Hosp.—Res. surg. O., £300. Also H.S., £150.
*West London Hosp., Hammersmith, W.*6.—Chief clin. asst. in X-ray (diagnostic) dept., £125.
*Westminster Hosp., St. John's Gardens, S.W.*1.—Res. house anæsthetist and res. H.S. to irradiation dept., each at rate of £50.
*Willesden General Hosp., Harlesden Road, N.W.*10.—Cas O., at rate of £100.
Windsor, King Edward VII Hosp.—H.S., £120.
*Woolwich and District War Memorial Hosp., Shooter's Hill, S.E.*18.—Cas. O., at rate of £100.
York County Hosp.—H.S. to eye, ear, nose and throat dept., £150.

The Chief Inspector of Factories announces vacancies for Examining Factory Surgeons at Kegworth (Derby), Ruskington (Lincoln), Kilmory (Bute) and Cowes (County of Southampton).

Births, Marriages and Deaths

BIRTHS

ALDERSON.—On June 8, at Hull, the wife of Dr. Frank George Seaforth Alderson—a son.
BINNING.—On June 9, at Hove, the wife of Dr. Rex Binning—a daughter.
CRAIG.—On June 12, at High Wycombe, the wife of Mr. J. Murison Craig, F.R.C.S.—a son.
HODGKINSON.—On June 10, at Milford-on-Sea, Hants, the wife of Dr. H. Ll. Hodgkinson—a son.
MACGREGOR.—On June 9, at Welbeck Street, W.1, the wife of Dr. Alexander Brittan MacGregor—a daughter.
MOYNAHAN.—On June 8, at Royal Northern Hospital, London, the wife of Dr. Edmund Moynahan—a son.
RUGG-GUNN.—On June 12, the wife of Surgeon Lieutenant M. A. Rugg-Gunn, of Rainham, Kent—a son.
SHACKEL.—On June 6, at Mayfield, Sussex, the wife of Dr. Edward M. Shackel—a son.
VINCENT SMITH.—On June 11, at Hendon, the wife of Surgeon Lieut.-Commander John Vincent Smith, R.N.—a son.

MARRIAGES

BERRY—HOLME.—On May 24, at Fort Johnston, Nyasaland, William Thomas Charles Berry, M.R.C.S., of Tunbridge Wells, to Veronica Anne Holme.
BURKITT—BAMBRIDGE.—On June 9, at St. Mary's, Wimbledon, Frederick Thomas Burkitt, M.D., to Kathleen Bambridge.
GEE—JAQUES.—On June 11, at Union Church, Hutton, Essex, Arthur Cecil Gee, M.B., to Marjory Beryl Jaques.
MARTIN—NORBURY.—On June 10, at All Souls' Church, Langham Place, Nicholas Henry Martin, M.R.C.P., to Joan Sybil Norbury.
TALBOT—VAN KLAVEREN.—On June 3, at St. Andrews, Much Hadham, John Edmund Talbot, M.R.C.S., to Joan Jacoba Bickmore van Klaveren.

DEATHS

CASSIDI.—On June 13, at Magherafelt, co. Londonderry, Francis Richard Cassidi, M.B.E., M.D. Dubl., J.P., late of Derby.
HERN.—On June 9, at Beaconsfield, Bucks, William Hern, O.B.E., M.R.C.S., L.D.S., late consulting dental surgeon to Middlesex Hospital, in his 83rd year.
HUBBERSTY.—On June 13, at Sunderland, Robert Stephen Hubbersty, M.D. Edin., aged 77.
HULKE.—On June 10, at Hungerford, Sydney Backhouse Hulke, F.R.C.S., late of The Croft, Walmer.
LEWTAS.—On June 6, at Banstead, Surrey, Frederick George Lewtas, M.R.C.S., aged 48.
MCCALL-SMITH.—On June 9, N. McCall-Smith, M.D. Durh., of Ash, Canterbury, Kent.
MCKENZIE.—On June 1, at Durban, S. Africa, Archibald McKenzie, M.D. Edin., M.R.C.S., aged 81.
MAGUIRE.—On June 13, in London, Charles Evans Maguire, M.D. Aberd., of Auckland, N.Z.
SEYMOUR.—On June 7, at Harley Street, W.1, Francis Robert Seymour, M.D. Dubl., D.P.H.

N.B.—A fee of 7s. 6d. is charged for the announcement of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

A UNIQUE MEDICAL TRACT

AT Sotheby's sale of the late Earl of Dysart's Ham House library this year the British Museum has acquired, through the Friends of the National Libraries, a unique early medical tract: "The Ouerthrow of the Gout written in Latin verse by Doctor Christopher Balista," translated into English verse by B. G. under the imprint of Abraham Veale, London, 1577. The identity of the poet hidden behind the initials B. G. is not certain. The 1890 edition of the "Dictionary of National Biography" says that this work was doubtfully assigned to Barnabe Googe, author of "Eglogs, Epytaphes, and Sonettes," published in 1563. The initials may conceal Bernard Garter, who flourished in the same period. Richard Master, to whom the Ouerthrow of the Gout is dedicated, was Queen Elizabeth's physician and prebendary of York, combining the cure of bodies with that of souls; he was president of the College of Physicians in 1561. He also acquired malaria in Kent in 1549—a quartan ague that lasted three months. Almost nothing is known of Dr. Christopher Balista, alias Arbaleste, author of the Latin original, "In Podagram Concertatio." He is supposed to have been a Parisian doctor and the author of five medical works.

The Ouerthrow of the Gout is described by H. Sellers in the *British Museum Quarterly* (February, 1939, p. 7). The causes of gout are first enumerated, including "colde, excessive Idlenes, and to much exercise"; "thick and clammy flemme"; "both the sortes of Choler"; and "tomuch blood." Many herbal, mineral, and animal remedies are mentioned, including "the root of marsh mallowes mingled with Ducks greace" and "a Fox fleaed (flayed) cut in small Gobbits destilled with Oile of Camomile, Oile of Rew, oile of wormes." Elaborate directions are given about diet, and cheerfulness is advised:

> "Far from thee look thou euer haue
> all grim and sollemne Syers;
> All lowring lumpish lookes that lothe,
> bequeath them to the Fryers."

A short Dialogue betwixt the Gout and Cri. Balista ends the book, which is known only from the present well-preserved copy.

LABOUR LASTING 182 HOURS

DELAY in the first stage of labour is attributed to various causes—notably emotional disturbance, over-distension of the bladder or the rectum, over-distension of the uterus, malpresentation, and cervical rigidity. The last of these is the rarest and, if not treated, may lead to rupture of the uterus. The treatment recommended by Chassar Moir in the British Encyclopædia of Medical Practice (vol. vii, p. 446) is incision; others have advised manual dilatation under spinal anæsthesia. Neither of these methods was used by Ramirez Olivella in a case of tedious labour lasting 182 hours in a primigravid European, aged 28, in Cuba (*Vida nueva*, Feb. 15, 1939, p. 102).

She was admitted to a maternity hospital on Oct. 11, with commencing dilatation (two finger-breadths) and feeble contractions. There was a normal bag of waters, the fœtal head had not engaged, and the sacral promontory could not be felt. On the next day the head was said to have engaged and the cervix to be somewhat rigid; whereupon an antispasmodic was injected. On the 13th the dilatation had increased to three finger-breadths and the edge of the os had become thinner. On the 15th dilatation had not advanced any further, the head was engaged low down, and the membranes ruptured spontaneously. Contractions were still feeble and widely spaced. Another injection of antispasmodic was given. Later on the same day dilatation increased slightly, and yet another injection of antispasmodic was given. During the 16th and 17th the dilatation gradually increased as the rigidity lessened. The patient slept well and did not appear to be suffering from fatigue, although she complained of the length of her labour. By that night it was estimated that dilatation was almost complete, on the 18th it was considered to be complete, and later in the day a healthy male child was born with the aid of low forceps.

A WOMAN'S MAN

AMONG the latest recruits to the rapidly growing army of medical autobiographers is Dr. Frederic Loomis, who practises gynæcology and obstetrics in California. (Consulting-room. London: J. M. Dent. 1939. Pp. 270. 8*s*. 6*d*.) Ambition to become a doctor came early, for it impelled him at the age of eight to dose the domestic cat with nauseous draughts of his own decocting. Although, for economic reasons, his ambition was not realised till comparatively late in life, his enthusiasm persisted and, qualified at last, he immediately began to specialise. "My world," he says, "has revolved round sex as a pivot, with love as a motive power," and if his manner of presentation grates perhaps a trifle melodramatically on English ears, he has no dearth of good stories to tell—some grave, some gay, but all intensely human. His accounts of youthful solecisms and misunderstandings are particularly happy, and such phrases as "Honeymoons, like autos, last longer if you don't race the engine" reveal a gift for epigram. It would be idle to deny that Dr. Loomis is a sentimentalist—he himself probably glories in the fact—but his candour, vigour and humour more than offset the tendency to mawkishness in his book.

ANATOMY OF HERNIÆ

IN connexion with the injection treatment of hernia, Dr. A. Katchian of Beirout asks what relationship the sac in oblique inguinal hernia bears to the cord at the internal ring, in the inguinal canal, at the external ring and in the scrotum, and whether the relationship is constant in all cases. Books on surgical pathology and even the newer publications on the injection treatment of hernia shed, he says, little or no light on this question.

Textbooks certainly show a regrettable tendency to beg this question, and an intimate knowledge of the anatomy of hernia is essential if injection treatment is to be safe and successful. In oblique herniæ the sac lies outside and slightly above the cord at the internal abdominal ring; in the inguinal canal the cord is adherent to the posterior surface of the sac; at the external abdominal ring the sac lies outside and slightly below the cord; and in the scrotum the sac is outside and in front of the cord. In the common type of oblique herniæ the relationship is probably constant. Variation may be found in children and, of course, in acquired and recurrent herniæ in adults.

SHORT STORIES FOR DOCTORS

THE 23 articles and short stories in Dr. Cecil Learoyd's "Physicians' Fare" (London: Edward Arnold, 1939, pp. 301, 7*s*. 6*d*.) all have a medical flavour, and, being written by a practising doctor, they are refreshingly free from those tiresome inaccuracies of medical detail which are all too common in books written by laymen. The stories cover a wide range of subjects, including murder, suicide, the past, the future and the hereafter. Among the best is "A Day in the Life of a Psychologist," though the musings of old Dr. Graver of Market Citron in "A Five-Minutes' Interlude" and elsewhere run it pretty close. Written in fluent style, the book is well seasoned with astringent humour, and the title is aptly chosen, for it is essentially a book for doctors. The author does not mince his words, and all but the least squeamish of extra-professional readers will find them strong meat.

ART AND ANATOMY

THE intimate relationship between art and anatomy is surely self-evident and Prof. R. N. Wegner of Frankfurt-am-Main need hardly have urged its importance in the introduction to his "Das Anatomenbildnis" (Basel: Benno Schwabe and Co. 1939. Pp. 199. Sw. Fr. 18). He needs no excuse for so scholarly a production, for the text evinces on every page a high standard of research, and the admirably reproduced illustrations, culled from a great variety of sources, reflect the artistic taste of their selector. It is natural to look in these portraits for some clue to the personalities of their subjects. Some of course are mainly of interest as examples of the art of portraiture, but we seem to trace in these pages a kindliness, a courtesy and a "humanity" which we should not find in a series of statesmen, warriors or kings. Science, it seems, is justified of her children. Of the pictures which will be new to most readers, the palm must be given as a work of art to the magnificent portrait of Jan Bleuland by Pieter Wonder, the treasured possession of the University of Utrecht. But the reproduction which charms by its "humanity" is the engraving of Du Laurens; it convinces us at a glance that Du Laurens was in every sense a great gentleman.

SULPHANILAMIDE IN SMALLPOX

IN our issue of March 25 (p. 740) mention was made of a case of smallpox successfully treated with Prontosil rubrum by King and de Rozario. Now comes news of four cases treated with sulphanilamide by W. O. McCammon of Kentucky (*J. Amer. med. Ass.* May 13, 1939, p. 1936). Three other cases in the same outbreak received symptomatic treatment only, all seven being of similar onset and prodromal period. Treatment in each case was begun before an eruption appeared, and in those treated with sulphanilamide there were only evanescent macules and no pustules, except for three pustules in one of them. Typical pustulation was seen in the cases treated symptomatically. The patients who received sulphanilamide were back at work about a week earlier than the other patients. In other respects there was apparently no difference in the course of the fever in the two sets of patients.

MIGRATION, ENVIRONMENT AND EVOLUTION

IN an exhaustive study, an account of which has recently been issued under the auspices of the University of Hawaii,[1] Prof. Shapiro has sought to measure the effects that a change of environment may have on the physical characteristics of a migrating population and their descendants. His field of inquiry has been Hawaii; but, with the support of its university and of the Rockefeller Foundation, he has pursued his investigations not only amongst the Japanese immigrants to Hawaii, and amongst their offspring born and bred there, but also, for comparison, amongst members of the families and villages in Japan from which the immigrants came in early manhood. The field work, carried out by Dr. Hulse, included some 43 anthropometric measurements (with 21 indices calculated from them) and 41 observations of such characters as hair and eye colour, and slope and height of forehead. From this material, relating in all to 2594 individuals and presented in nearly 400 pages of tables, Shapiro finds initially that the migrating population differs in most respects from its stay-at-home relations. They have, to quote one or two instances, shorter trunks and longer legs, longer noses and wider shoulders. Whatever may be the cause, the migrating population is physically not a random sample of the families from which it sprang—a result which is not altogether unexpected. Rather more surprising is the further observation that their children, born and reared in Hawaii, seem to undergo further modifications in measurable (but not in qualitative) characters. They differ in many respects both from their parent stock and from their relatives in Japan. In other words, environmental influences have, it seems, produced physical changes within a single generation. This leads Shapiro to the conclusion that selective migration and environmental modifications may well be contributory factors in the complex process of differentiation and evolution.

1. Migration and Environment. By H. L. Shapiro, with the field assistance of Frederick S. Hulse. London: Humphrey Milford, Oxford University Press. 1939. Pp. 592. 32*s*. 6*d*.

A BIOLOGICAL DICTIONARY

THE title of "A Dictionary of Scientific Terms," originally prepared by I. F. and W. D. Henderson and now revised by J. H. Kenneth (London: Oliver and Boyd. Pp. 383. 16*s*.), is misleading, for it covers only the biological sciences—botany, zoology, anatomy, cytology, embryology and physiology. Within these limits, however, it does its job well, though in some of the definitions clarity has been sacrificed to brevity and polysyllables have been preferred to their shorter equivalents. Pronunciation and spelling are those generally accepted in this country. The medical man will not find answers here to all the conundrums he meets in his reading, but it is perhaps just in these sciences that border on medicine that he most needs guidance.

PLAY AS TREATMENT[1]

Dr. Rogerson, who has studied children at play at a child-guidance clinic, is sceptical of the value for children of such lengthy forms of treatment as psycho-analysis and of interpretative techniques deduced from adult analysis. His work confirms the therapeutic effect of play under certain controlled conditions, which he describes, upon difficult children. He lays insufficient stress, perhaps, on the variation in reactions; some children are undoubtedly able to work through their difficulties adequately in a play group, while others need long and intensive treatment. Dr. Rogerson does less than justice to other forms of treatment of proven value and moreover leaves rather doubtful his criteria for estimating recovery. For example one child at the time of discharge is described as a "normal though very aggressive little boy" without any suggestion that excessive aggression may lead to further trouble. A close examination of the clinical material given in this little book reveals some inconsistencies, and other workers in this difficult field may find the author a little too optimistic.

1. Play Therapy in Childhood. By C. H. Rogerson, M.D. Lond., M.R.C.P., D.P.M., medical director, the Cassel Hospital, Penshurst, Kent; late chief clinical assistant, department of psychological medicine, Guy's Hospital, London. London: Humphrey Milford, Oxford University Press. 1939. Pp. 63. 3*s*. 6*d*.

"When a hen has laid eggs for the first time in her life she immediately sits on them . . . . Hitherto science has called this a typical example of animal instinct. . . . What is the real truth of the matter? Careful investigation has proved that the animal certainly has personal motives for sitting, but they are not biological ones. Shortly before the beginning of hatching-time the animal's breast shows the so-called hatching spot. Here the feathers fall out and there is a bald spot which feels hot, as if from inflammation (probably caused by hormones). This evidently causes the animal pain, for it seeks cooling substances, which must necessarily have a curved shape to be effective. After the eggs have been laid, these offer what is required. . . . The hen turns the eggs so that she may sit on the cool parts, and without meaning to do so she thus causes all parts of the egg to be equally warmed. . . . I must once more state emphatically that the instinct hypothesis is in direct contradiction to every result of the modern theory of heredity. It has been proved again and again that only a certain disposition to receive impressions on one hand, and to general emotional attitude and bent of mind on the other is inherited; for example, a profoundly emotional nature or a generally intelligent disposition."—Prof. J. A. LOESER, *Nature, Lond.* May 27, 1939, p. 880.